



ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 98

[EPA-HQ-OAR-2015-0764; FRL-9955-12-OAR]

RIN 2060-AS73

**Greenhouse Gas Reporting Rule: Leak Detection Methodology
Revisions and Confidentiality Determinations for Petroleum and
Natural Gas Systems**

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency is finalizing revisions and confidentiality determinations for the petroleum and natural gas systems source category of the Greenhouse Gas Reporting Program. In particular, this action adds new monitoring methods for detecting leaks from oil and gas equipment in the petroleum and natural gas systems source category consistent with the fugitive emissions monitoring methods in the recently finalized new source performance standards for the oil and gas industry. This action also adds emission factors for leaking equipment to be used in conjunction with these monitoring methods to calculate and report greenhouse gas emissions resulting from equipment leaks. Finally, this action finalizes reporting requirements and confidentiality

determinations for nine new or substantially revised data elements contained in these amendments.

DATES: This final rule is effective on January 1, 2017.

ADDRESSES: The EPA has established a docket for this action under Docket ID No. EPA-HQ-OAR-2015-0764. All documents in the docket are listed on the <http://www.regulations.gov> web site. Although listed in the index, some information is not publicly available, e.g., confidential business information (CBI) or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available electronically through <http://www.regulations.gov>.

FOR FURTHER INFORMATION CONTACT: Carole Cook, Climate Change Division, Office of Atmospheric Programs (MC-6207A), Environmental Protection Agency, 1200 Pennsylvania Ave., NW, Washington, DC 20460; telephone number: (202) 343-9334; fax number: (202) 343-2342; e-mail address: GHGReporting@epa.gov. For technical information, please go to the Greenhouse Gas Reporting Rule Web site, <http://www.epa.gov/ghgreporting/>. To submit a question, select Help Center, followed by "Contact Us."

Worldwide Web (WWW). In addition to being available in the docket, an electronic copy of this final rule will also be available through the WWW. Following the Administrator's

signature, a copy of this action will be posted on the EPA's Greenhouse Gas Reporting Rule Web site at <http://www.epa.gov/ghgreporting/index.html>.

SUPPLEMENTARY INFORMATION:

Regulated Entities. These revisions affect entities that must submit annual greenhouse gas (GHG) reports under the Greenhouse Gas Reporting Program (GHGRP), codified in the Code of Federal Regulations (CFR) at 40 CFR part 98. This rule applies to all petroleum and natural gas systems facilities that are subject to 40 CFR part 98, regardless of the facility's location, and ensures that all these facilities across the United States (U.S.) report GHG data consistently, and therefore is "nationally applicable" within the meaning of section 307(b)(1) of the Clean Air Act (CAA). Further, the Administrator has determined that rules codified in 40 CFR part 98 are subject to the provisions of CAA section 307(d). (See CAA section 307(d)(1)(V) (the provisions of section 307(d) apply to "such other actions as the Administrator may determine").) These are amendments to existing regulations. These amended regulations affect owners or operators of petroleum and natural gas systems that directly emit GHGs. Regulated categories and entities include, but are not limited to, those listed in Table 1 of this preamble:

Table 1. Examples of Affected Entities by Category

Category	NAICS^a	Examples of affected facilities
Petroleum and Natural Gas Systems	486210	Pipeline transportation of natural gas.
	221210	Natural gas distribution.
	211111	Crude petroleum and natural gas extraction.
	211112	Natural gas liquid extraction.

^a North American Industry Classification System.

Table 1 of this preamble is not intended to be exhaustive, but rather provides a guide for readers regarding facilities likely to be affected by this action. Other types of facilities than those listed in the table could also be subject to reporting requirements. To determine whether you are affected by this action, you should carefully examine the applicability criteria found in 40 CFR part 98, subpart A and 40 CFR part 98, subpart W. If you have questions regarding the applicability of this action to a particular facility, consult the person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section.

What is the effective date? The final rule is effective on January 1, 2017. Section 553(d) of the Administrative Procedure Act (APA), 5 U.S.C. Chapter 5, generally provides that rules may not take effect earlier than 30 days after they are published in the Federal Register. The EPA is issuing this final rule under section 307(d)(1) of the Clean Air Act, which states: "The provisions of section 553 through 557 * * * of Title 5 shall not, except as expressly provided in this section, apply to

actions to which this subsection applies." Thus, section 553(d) of the APA does not apply to this rule. The EPA is nevertheless acting consistently with the purposes underlying APA section 553(d) in making the first set of amendments to this rule effective on January 1, 2017. Section 553(d) allows an effective date less than 30 days after publication for a rule that "grants or recognizes an exemption or relieves a restriction" or "as otherwise provided by the agency for good cause found and published with the rule." As explained below, the EPA finds that there is good cause for the first set of amendments to this rule to become effective on January 1, 2017, even though this may result in an effective date fewer than 30 days from date of publication in the Federal Register.

While this action is being signed prior to December 1, 2016, there is likely to be a significant delay in the publication of this rule as it contains complex equations and tables and is relatively long. As an example, the EPA Administrator signed the Greenhouse Gas Reporting Rule: 2015 Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems final rule on October 1, 2015, but the rule was not published in the Federal Register until October 22, 2015 (80 FR 64262). The purpose of the 30-day waiting period prescribed in 5 U.S.C. 553(d) is to give affected parties a reasonable time to adjust their behavior and prepare before the

final rule takes effect. To employ the APA section 553(d)(3) “good cause” exemption, an agency must balance the necessity for immediate implementation against principles of fundamental fairness which require that all affected persons be afforded a reasonable amount of time to prepare for the effective date of its ruling.¹ Where, as here, the final rule will be signed and made available on the EPA Web site more than 30 days before the effective date, but where the publication is likely to be delayed due to the complexity and length of the rule, the regulated entities are afforded this reasonable amount of time. We balance these circumstances with the need for the amendments to be effective by January 1, 2017; a delayed effective date would result in regulatory uncertainty, program disruption, and an inability to have the amendments effective for the 2017 reporting year. Accordingly, we find good cause exists to make this rule effective on January 1, 2017, consistent with the purposes of APA section 553(d)(3).

Judicial Review. Under CAA section 307(b)(1), judicial review of this final rule is available only by filing a petition for review in the U.S. Court of Appeals for the District of Columbia Circuit (the Court) by **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. Under CAA section

¹ *Omnipoint Corp. v. FCC*, 78 F3d 620, 630 (D.C. Cir. 1996), quoting *U.S. v. Gavrilovic*, 551 F.2d 1099, 1105 (8th Cir. 1977).

307(d)(7)(B), only an objection to this final rule that was raised with reasonable specificity during the period for public comment can be raised during judicial review. Section 307(d)(7)(B) of the CAA also provides a mechanism for the EPA to convene a proceeding for reconsideration, "[i]f the person raising an objection can demonstrate to the EPA that it was impracticable to raise such objection within [the period for public comment] or if the grounds for such objection arose after the period for public comment (but within the time specified for judicial review) and if such objection is of central relevance to the outcome of the rule." Any person seeking to make such a demonstration to us should submit a Petition for Reconsideration to the Office of the Administrator, Environmental Protection Agency, Room 3000, William Jefferson Clinton Building, 1200 Pennsylvania Ave., NW, Washington, DC 20460, with a copy to the person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section, and the Associate General Counsel for the Air and Radiation Law Office, Office of General Counsel (Mail Code 2344A), Environmental Protection Agency, 1200 Pennsylvania Ave., NW, Washington, DC 20004. Note that under CAA section 307(b)(2), the requirements established by this final rule may not be challenged separately in any civil or criminal proceedings brought by the EPA to enforce these requirements.

Acronyms and Abbreviations. The following acronyms and abbreviations are used in this document.

APA	Administrative Procedure Act
CAA	Clean Air Act
CBI	Confidential Business Information
CFR	Code of Federal Regulations
CH ₄	methane
CO ₂	carbon dioxide
CRA	Congressional Review Act
DOT	Department of Transportation
EPA	U.S. Environmental Protection Agency
FR	<i>Federal Register</i>
GHG	greenhouse gas
GHGRP	Greenhouse Gas Reporting Program
GRI	Gas Research Institute
ICR	Information Collection Request
LNG	liquefied natural gas
NAICS	North American Industry Classification System
NSPS	New Source Performance Standards
NTTAA	National Technology Transfer and Advancement Act
OGI	optical gas imaging
OMB	Office of Management and Budget
ppmv	parts per million by volume
PRA	Paperwork Reduction Act
RFA	Regulatory Flexibility Act
U.S.	United States
UMRA	Unfunded Mandates Reform Act
VOC	volatile organic compounds
WWW	Worldwide Web

Organization of This Document. The following outline is provided to aid in locating information in this preamble.

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- I. National Technology Transfer and Advancement Act
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I. Background

A. Organization of this Preamble

Section I of this preamble provides background information regarding the origin of the final amendments. This section also discusses the EPA's legal authority under the CAA to promulgate and amend 40 CFR part 98 of the Greenhouse Gas Reporting Rule (hereafter referred to as "part 98") as well as the legal authority for making confidentiality determinations for the data to be reported. Section II of this preamble contains information on the final amendments to part 98, subpart W (Petroleum and Natural Gas Systems) (hereafter referred to as "subpart W"), including a summary of the major comments that the EPA considered in the development of this final rule. Section III of this preamble discusses the final confidentiality determinations for new or substantially revised data reporting elements. Section IV of this preamble discusses the impacts of the final amendments to subpart W. Finally, section V of this preamble describes the statutory and executive order requirements applicable to this action.

B. Background on this Action

The EPA's GHGRP requires annual reporting of GHG data and other relevant information from large sources and suppliers in the United States. On October 30, 2009, the EPA published part 98 in the Federal Register (FR) for collecting information

regarding GHG emissions from a broad range of industry sectors (74 FR 56260). Although reporting requirements for petroleum and natural gas systems were originally proposed to be part of part 98 (74 FR 16448, April 10, 2009), the final October 2009 rulemaking did not include the petroleum and natural gas systems source category as one of the 29 source categories for which reporting requirements were finalized. The EPA re-proposed subpart W in 2010 (75 FR 18608; April 12, 2010), and a subsequent final rulemaking was published on November 30, 2010, with the requirements for the petroleum and natural gas systems source category at 40 CFR part 98, subpart W (75 FR 74458). Following promulgation, the EPA finalized several actions revising subpart W (76 FR 22825, April 25, 2011; 76 FR 53057, August 25, 2011; 76 FR 59533, September 27, 2011; 76 FR 80554, December 23, 2011; 77 FR 51477, August 24, 2012; 78 FR 25392, May 1, 2013; 78 FR 71904, November 29, 2013; 79 FR 70352, November 25, 2014; 80 FR 64262, October 22, 2015).²

The *Strategy to Reduce Methane Emissions* in the President's *Climate Action Plan* summarizes the sources of CH₄ emissions, commits to new steps to cut emissions of this potent GHG, and outlines the Administration's efforts to improve the measurement

² See Greenhouse Gas Reporting Program, Historical Rulemakings. Available at <https://www.epa.gov/ghgreporting/rulemaking-notices-ghg-reporting>.

of these emissions. The strategy builds on progress to date and takes steps to further cut CH₄ emissions from several sectors, including the oil and natural gas sector. In the strategy, the EPA was specifically tasked with continuing to review GHGRP regulatory requirements to address potential gaps in coverage, improve methods, and ensure high quality data reporting.³ On January 14, 2015, the Obama administration provided additional direction to the EPA to “explore potential regulatory opportunities for applying remote sensing technologies and other innovations in measurement and monitoring technology to further improve the identification and quantification of emissions” in the oil and natural gas sector, such as the emissions submitted as part of GHGRP annual reporting.⁴

Under subpart W, GHGs that must be reported by each industry segment and applicable source types are specified in 40 CFR 98.232, including equipment leaks from listed component types. In order to fulfill these equipment leak emissions reporting requirements, reporters must utilize one of two

³ *Climate Action Plan—Strategy to Reduce Methane Emissions*. The White House, Washington, DC, March 2014. Available at http://www.whitehouse.gov/sites/default/files/strategy_to_reduce_methane_emissions_2014-03-28_final.pdf.

⁴ *FACT SHEET: Administration Takes Steps Forward on Climate Action Plan by Announcing Actions to Cut Methane Emissions*. The White House, Office of the Press Secretary, January 14, 2015. Available at <https://www.whitehouse.gov/the-press-office/2015/01/14/fact-sheet-administration-takes-steps-forward-climate-action-plan-anno-1>.

calculation methodologies⁵ to calculate GHG emissions from equipment leaks as specified in 40 CFR 98.233: 1) calculation methodology based on equipment leak surveys (40 CFR 98.233(q)), or 2) calculation methodology based on population counts (40 CFR 98.233(r))⁶. For example, facilities in the Onshore Natural Gas Processing and Onshore Natural Gas Transmission Compression industry segments use the calculation methodology based on equipment leak surveys for most components at their facilities. If 40 CFR 98.233(q) specifies that an equipment leak survey is required for the subsection of listed component types in 40 CFR 98.232, reporters must use one of the monitoring methods specified in 40 CFR 98.234 when conducting those equipment leak surveys to detect leaking components at the facility. The calculation methodology based on equipment leak surveys requires that the reporter then determine the total amount of time each

⁵ Throughout this preamble, the term "calculation methodology" refers to the procedures used to calculate emissions (e.g., "calculation methodology based on equipment leak surveys" refers to the methodology described in 40 CFR 98.233(q)) and "monitoring method" refers to the technology, test method, or other method of determining whether an individual component is leaking (see 40 CFR 98.234(a)). The term "leak detection method" that is used in the 40 CFR part 98 subpart W regulatory text has the same meaning as "monitoring method" used in this preamble.

⁶ Reporters using the calculation methodology based on population counts determine the total number of all components in the facility and multiply that count by the average estimated time of operation, the concentration of the CH₄ and CO₂ in the gas, and the applicable emission factor (referred to as a "population emission factor") to calculate emissions.

component was assumed to be leaking and multiply that by the concentration of the methane (CH₄) and carbon dioxide (CO₂) in the gas and the applicable emission factor (referred to as a "leaker emission factor"), listed in Table W-1E and Table W-2 through Table W-7, to calculate emissions. Finally, 40 CFR 98.236 specifies the data elements that must be reported to the EPA.

On January 29, 2016, the EPA proposed "Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems" (81 FR 4987) to add new monitoring methods for detecting leaks from oil and gas equipment, to revise which industry segments and sources use the calculation methodology based on equipment leak surveys or the calculation methodology based on population counts, to clarify how the definition of fugitive emission components in the new source performance standards (NSPS) for the oil and natural gas sector (40 CFR part 60, subpart OOOOa, at 81 FR 35824) (hereafter referred to as the "NSPS subpart OOOOa") aligns with the equipment components subject to subpart W, to add leaker emission factors for multiple industry segments, and to add reporting requirements and confidentiality determinations for new or substantially revised data elements. Under those proposed amendments, facilities with fugitive emissions components at a well site or compressor station subject to the NSPS subpart

0000a would use data derived from the NSPS subpart 0000a fugitive emissions requirements (*i.e.*, which components were determined to have fugitive emissions) along with the subpart W leaker emission factors to calculate and report GHG emissions to the GHGRP. The proposed revisions provided the opportunity for owners and operators of sources not subject to the NSPS subpart 0000a well site or compressor station fugitive emissions standards (*e.g.*, sources participating in a voluntarily implemented program) and not already required to conduct leak surveys under subpart W to optionally use the calculation methodology at 40 CFR 98.233(q) to calculate and report their GHG emissions to the GHGRP. The EPA also proposed that facilities that are already required to conduct leak surveys under subpart W would be able to use the newly proposed monitoring method(s) in 40 CFR 98.234. In addition, the EPA proposed new reporting requirements for all reporters using the calculation methodology based on equipment leak surveys and proposed to require reporters using the calculation methodology for the first time to begin reporting the information associated with that methodology. Finally, the EPA proposed confidentiality determinations for nine new or substantially revised data elements. The public comment period for these proposed rule amendments ended on March 15, 2016, following a 15-day extension of the original comment period end date (81 FR 9797; February

26, 2016). On June 3, 2016, the EPA published the final NSPS subpart OOOOa requirements (81 FR 35824).

In this action, the EPA is finalizing revisions to subpart W largely as proposed, with some changes made after consideration of public comments. Summaries of significant comments submitted on the proposed amendments and the EPA's responses to those comments can be found in sections II, III, and IV of this preamble. All comments submitted on the proposed amendments and the EPA's additional responses to the comments can be found in "Response to Public Comments on Greenhouse Gas Reporting Rule: Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems" in Docket ID No. EPA-HQ-OAR-2015-0764.

As further detailed in the preamble to the proposed amendments, these revisions advance the EPA's goal of maximizing rule effectiveness by providing a mechanism for facilities to use the NSPS subpart OOOOa monitoring results for purposes of GHGRP subpart W reporting. This alignment reduces burden for entities subject to the fugitive emissions/equipment leak detection method requirements in both programs, and, when combined with the other amendments being finalized in this revision, provides clear monitoring methods, equipment leak survey and calculation methodologies and emission factors, and reporting requirements in subpart W, thus enabling government,

regulated entities, and the public to easily identify and understand regulatory requirements. These amendments also further advance the ability of the GHGRP to provide access to high quality data on GHG emissions by adding the ability for reporters to use data collected during equipment leak surveys and to perform site-specific equipment leak calculations.

C. Legal Authority

The EPA is finalizing these rule amendments under its existing CAA authority provided in CAA section 114. As stated in the preamble to the 2009 final GHG reporting rule (74 FR 56260; October 30, 2009), CAA section 114(a)(1) provides the EPA broad authority to require the information to be gathered by this rule because such data will inform and are relevant to the EPA's carrying out a wide variety of CAA provisions. See the preambles to the proposed (74 FR 16448; April 10, 2009) and final GHG reporting rule (74 FR 56260; October 30, 2009) for further information.

In addition, pursuant to sections 114, 301, and 307 of the CAA, the EPA is publishing final confidentiality determinations for the new or substantially revised data elements required by these amendments. Section 114(c) requires that the EPA make information obtained under section 114 available to the public, except for information (excluding emission data) that qualifies for confidential treatment. The Administrator has determined

that this action is subject to the provisions of section 307(d) of the CAA. Section 307(d) contains a set of procedures relating to the issuance and review of certain CAA rules.

D. How Do These Amendments Apply to 2016 and 2017 Reports?

These amendments are effective on January 1, 2017. Starting with the 2017 reporting year, facilities must follow the revised methods to detect equipment leaks (if applicable) and to calculate and report their annual equipment leak emissions. The first annual reports of emissions calculated using the amended requirements will be those submitted by April 2, 2018, covering reporting year 2017. For reporting year 2016, reporters will calculate emissions according to the requirements in part 98 that are applicable to reporting year 2016 (*i.e.*, the requirements in place until the effective date of this final rule).

II. Summary of Final Revisions and Other Amendments to Subpart W and Responses to Public Comment

Sections II.A through II.F of this preamble describe the revisions that we are finalizing in this rulemaking. Section II.A provides a general summary of the final amendments to subpart W. Section II.B describes the final amendments to the requirement to use the calculation methodology based on equipment leak surveys. Section II.C describes the final amendments to the subpart W monitoring methods. Section II.D

describes the final amendments for component types to be surveyed. Section II.E describes the final amendments to the subpart W leaker emission factors. Finally, section II.F provides a summary of the final amendments to the subpart W reporting requirements. The amendments described in each section are followed by a summary of the major comments on those amendments and the EPA's responses. See "Response to Public Comments on Greenhouse Gas Reporting Rule: Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems" in Docket ID No. EPA-HQ-OAR-2015-0764 for a complete listing of all comments and the EPA's responses.

A. Summary of Final Amendments - General

1. Summary of Final Amendments

In this action, the EPA is amending subpart W to add new monitoring methods for detecting leaks from oil and gas equipment in the petroleum and natural gas systems source category consistent with the NSPS subpart 0000a. The EPA is also specifying that facilities with a collection of fugitive emissions components at a well site or compressor station subject to the NSPS subpart 0000a (40 CFR 60.5397a) would be required to survey those components, except as otherwise specified in this subpart W final rule, for the subpart W calculation methodology based on equipment leak surveys using

one of the new monitoring methods being added to subpart W. In practice, this means that facilities can use the results of the NSPS subpart 0000a-required fugitive emissions monitoring survey to fulfill these subpart W requirements. The EPA is adding leaker emission factors to be used in conjunction with the calculation methodology based on equipment leak surveys to calculate and report GHG emissions. The revisions provide the opportunity for owners and operators of sources not subject to the NSPS subpart 0000a well site or compressor station fugitive emissions standards (e.g., sources participating in a voluntarily implemented program) and not already required to conduct leak surveys under subpart W to optionally use the calculation methodology at 40 CFR 98.233(q) to calculate and report their GHG emissions, and to use the new monitoring methods in 40 CFR 98.234 to do so.

Facilities in certain subpart W industry segments⁷ that are already required to conduct leak surveys will be able to use the new monitoring methods in 40 CFR 98.234. If they use either of the two new monitoring methods in 40 CFR 98.234(a)(6) or (7) that are consistent with the NSPS subpart 0000a, then in addition to surveying the components currently subject to the

⁷ These segments are Onshore Natural Gas Transmission Compression, Underground Natural Gas Storage, LNG Storage, and LNG Import and Export Equipment.

survey requirements in subpart W, they must also survey all other components that are fugitive emissions components in the NSPS subpart 0000a, with limited exceptions, as specified in 40 CFR 98.232 (see sections II.C and II.D of this preamble). If they use any of the monitoring methods currently in 40 CFR 98.234(a)(1) through (5), then in addition to surveying the components currently subject to the survey requirements in subpart W, they may elect to survey the other components specified in 40 CFR 98.232.

The comments received on this rule generally do not dispute the merit of allowing the use of new monitoring methods in subpart W, but they do include issues related to the adequacy of the notice and comment process, the calculation methodology based on equipment leak surveys, reporting, and applicability.

2. Summary of Comments and Responses

Comment: Numerous commenters stated that the EPA's reference to the proposed NSPS subpart 0000a included in the subpart W proposal was premature, and substantively and procedurally flawed. According to these commenters, by relying on a proposed action, the EPA did not provide the opportunity for notice or comment on how the rule would ultimately affect stakeholders. These commenters stated that at the very least the EPA made it difficult and increased burden for stakeholders to evaluate scope and impacts and to provide comment. Commenters

stated that they could only comment on the effect of the incorporation of the NSPS subpart 0000a proposed requirements, as they could not review and comment on the effect of the finalized NSPS subpart 0000a requirements on subpart W prior to closure of the comment period for the subpart W proposal. Specifically, the commenters expressed concern that because the EPA received so many comments on the proposed NSPS subpart 0000a, the final NSPS subpart 0000a provisions would likely be significantly different in certain aspects and that those details were unknowable at the time of comment. Noting that the EPA expressed intent in the preamble to the subpart W proposed amendments to incorporate the final NSPS subpart 0000a provisions in the final subpart W rule, the commenters stated they inherently would have no formal opportunity to meaningfully comment on the effect those final NSPS subpart 0000a provisions would have on subpart W reporters. Several commenters stated that this created substantive and procedural flaws in the proposed rule, as the EPA provided neither the "terms or substance" nor a "description of the subjects and issues involved" of the proposed rule as required for notice and comment rulemaking under the Administrative Procedure Act, 5 U.S.C. § 553(b), nor did the EPA meet the more stringent notice and comment requirements of CAA section 307. Several commenters stated that EPA similarly did not consider changes that might be

made to the final NSPS subpart 0000a through the judicial review process.

Several commenters requested that the EPA either finalize, or re-propose or re-open the public comment period for, the proposed alignment of subpart W with the NSPS subpart 0000a only after the NSPS subpart 0000a is finalized. Other commenters requested that the EPA withdraw the proposal to amend subpart W and reconsider whether any revisions are necessary once the NSPS subpart 0000a is in effect.

Response: The EPA disagrees that the proposed rule for this subpart W revision was premature, or substantively and procedurally flawed. This action is focused on aligning the subpart W requirements, to the extent possible, with the finalized NSPS subpart 0000a fugitive emission requirements so that facilities may use the results of the NSPS subpart 0000a-required fugitive emissions monitoring surveys to fulfill subpart W requirements, and does so through revisions that incorporate final NSPS subpart 0000a monitoring methods into subpart W and make their use mandatory in subpart W surveys for most components subject to NSPS subpart 0000a. The proposed rule for subpart W clearly specified that only a monitoring method finalized in the NSPS subpart 0000a rule would be finalized for subpart W, which ensured that no requirement would reference any monitoring method that was merely at proposal stage. The

proposed rule provided adequate notice and opportunity to comment on how the rule will affect stakeholders, and thus this final rule is in compliance with the relevant requirements of CAA section 307(d). Multiple commenters cited the Administrative Procedure Act (APA), including 5 U.S.C. § 553(b)(3), which requires that a notice of proposed rulemaking shall include "either the terms or substance of the proposed rule or a description of the subjects and issues involved." The EPA notes that our process is also consistent with the notice and comment requirements of the APA, 5 U.S.C. §§ 551-559. In the preamble to the proposed and final rule, as well as in "Response to Public Comments on Greenhouse Gas Reporting Rule: Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems" in Docket ID No. EPA-HQ-OAR-2015-0764, the EPA describes at length the statement and purpose of the revisions, provides explanations for any changes in the rule, and responds to all comments submitted.

Specifically, in regards to the proposed rule referencing the then proposed NSPS subpart OOOOa monitoring method(s) and fugitive emissions component definition,⁸ the EPA disagrees that the proposed rule did not give adequate notice and therefore the EPA did not re-propose or re-open the comment period for this

⁸ The NSPS subpart OOOOa rule has since been finalized. 81 FR 35824 (June 3, 2016).

action. The proposed rule clearly laid out the EPA's proposal and requested comment regarding alternatives, as well as the detailed reasoning behind and goals of the proposal. The EPA provided this detailed explanation to ensure that commenters had ample notice of the revisions under consideration, and provided 45 days for the public comment period. This process accords with proper notice and comment procedure. Commenters posit that referencing the then proposed NSPS subpart 0000a standard in the proposed rule renders this notice premature and inadequate, and the EPA respectfully disagrees. First, in proposing to add the NSPS subpart 0000a equipment leak detection methods as approved monitoring methods for subpart W surveys, the EPA was not proposing to require any new collection of data under subpart W, as the data on fugitive emissions components would already be collected to meet the requirements of NSPS subpart 0000a. Instead, the EPA proposed to add these new monitoring methods under subpart W so that reporters would be able to use, for the purpose of compliance with the proposed mandatory subpart W equipment leak survey, calculation, and reporting requirements, whatever data would already be collected as a result of complying with the monitoring method(s) that would be finalized in the NSPS subpart 0000a. Similarly, while the EPA proposed to include all fugitive emissions components subject to the final NSPS subpart 0000a monitoring methods within subpart W emissions

reporting requirements, with some exceptions, which would mean that additional components would fall within the scope of subpart W applicability, these data would already be collected under the NSPS subpart 0000a, meaning that no new data would need to be collected for subpart W that was not already required by another CAA program. As such, the substance of the monitoring method(s) and fugitive emission component definition was not at issue for purposes of subpart W within these revisions, as that process took place within the NSPS subpart 0000a rulemaking. Rather, the EPA ensured that reporters were provided notice of the proposal to add the monitoring methods and scope of components that would be finalized under the NSPS 0000a as additional monitoring methods and applicable components for subpart W, provided notice of the proposed additional subpart W equipment leak survey, calculation, and reporting requirements for equipment components subject to the NSPS subpart 0000a, and made clear that the intent of these revisions was to align the programs so that reporters would use the data gathered in complying with the finalized NSPS subpart 0000a to comply with their subpart W requirements. The proposed rule further explained the purpose behind this proposed revision, as detailed in the proposed rule (81 FR 4987; January 29, 2016), including reducing burden on reporters by minimizing the potential equipment leak surveys required at a given facility across CAA

programs. As noted earlier, the proposed rule for subpart W clearly specified that only a monitoring method finalized in the NSPS subpart 0000a rule would be finalized for subpart W, which ensured that no requirement would reference any monitoring method that was merely at proposal stage. In fact, the proposed rule for subpart W clearly detailed the NSPS subpart 0000a proposed monitoring method, and identified that the NSPS subpart 0000a proposal included a potential alternative monitoring method, and furthermore explained that any method(s) added in this final subpart W action would be the method(s) that were finalized in the NSPS subpart 0000a.

Furthermore, Subpart W currently includes an optical gas imaging (OGI) method (see 40 CFR 98.234(a)(1)) and Method 21 (40 CFR 98.234(a)(2)) in the subpart W list of monitoring methods. While there are differences in the application of the methods between the current subpart W and the final NSPS subpart 0000a,⁹ necessitating this revision, current use of OGI and Method 21 for purposes of subpart W provides support that the methods at issue provide reliable data for use in subpart W emissions reporting.

This final rule incorporates the monitoring methods finalized in the NSPS subpart 0000a with some changes from

⁹ See section II.C of this preamble.

proposal. To the extent the specifics of how this final subpart W rule is adding method(s) in accordance with the NSPS subpart 0000a differ from the specifics in the subpart W proposal, as explained further in section II.C of this preamble, these changes are consistent with the purpose detailed in the proposed rule and were made to ensure only those portions of the final NSPS subpart 0000a that are essential to the integrity of the methods are referenced within the requirements of subpart W. This final rule revises applicable components subject to subpart W to include all components subject to the final NSPS subpart 0000a, except for the finalized as proposed exclusion of certain components, as further detailed in section II.D of this preamble. The EPA notes that while we finalized the reference to the NSPS subpart 0000a with certain exceptions regarding applicable components as proposed, the final NSPS subpart 0000a definition of fugitive emission components was narrower in scope than that rule's proposal. This final rule also includes revisions, with some changes from proposal as detailed in Sections II.B, II.D, II.E, and II.F of this preamble, to how reporters must use the data obtained in accordance with the methods finalized in the NSPS subpart 0000a for subpart W reporting.

Although the EPA's own reasoned consideration and its assessment of public comment have resulted in some modifications

to the final rule, as explained further in sections II.B through II.F of this preamble, such changes reflect the goals and alternatives in the EPA's original proposal, and the proposed rule ensured that interested parties were "fairly apprised" of the elements ultimately included in this final rulemaking. See, e.g., *United Steelworkers of America v. Schuylkill Metals*, 828 F.2d 314 (5th Cir. 1987).

While some changes occurred to the NSPS subpart 0000a requirements from proposal to final in that rulemaking, including changes to the substance of the monitoring methods and the fugitive emission component definition, those substantive changes are out of scope of this subpart W rulemaking that is intended to align with the final NSPS subpart 0000a requirements; however, commenters were provided full notice and opportunity to comment within that NSPS subpart 0000a rulemaking, as fully explained within those proposed and final preambles, the EPA's response to comments, and the docket of that action.¹⁰

The commenter is correct that the EPA did not consider changes that may be made to the final NSPS subpart 0000a through the judicial review process. Any such potential, future changes are premature to consider at this time.

¹⁰ Docket ID No. EPA-HQ-OAR-2010-0505.

B. Summary of Final Amendments to the Requirement to Use the Calculation Methodology Based on Equipment Leak Surveys

1. Summary of Final Amendments

As noted in section I.B of this preamble, subpart W presently requires reporters with sources in certain industry segments to use the calculation methodology based on population counts according to 40 CFR 98.233(r). For example, reporters in the Onshore Petroleum and Natural Gas Production and the Onshore Petroleum and Natural Gas Gathering and Boosting industry segments are required either to count the number of equipment components of each type (e.g., valve, connector, open-ended line, or pressure relief valve) or to count the number of major equipment at the facility and then calculate the number of equipment components of each type using default average component counts for each piece of major equipment in Tables W-1B and W-1C to subpart W (40 CFR 98.233(r)(2)). The resulting equipment component counts are then multiplied by default "population emission factors" in Table W-1A to subpart W to calculate emissions from equipment leaks.

Other reporters are required to use the calculation methodology based on equipment leak surveys according to 40 CFR 98.233(q) using one of the monitoring methods in 40 CFR 98.234(a). For example, reporters in the Onshore Natural Gas Transmission Compression industry segment must conduct at least

one equipment leak survey in a calendar year for the compressor and non-compressor components in gas service listed in Table W-3A to subpart W. These reporters then use the number of leaking components in the calendar year, the average amount of time each component was leaking, and the default "leaker emission factors" in Table W-3A to subpart W to calculate emissions according to Equation W-30.

The EPA is finalizing the proposal to apply the calculation methodology based on equipment leak surveys in 40 CFR 98.233(q) to additional reporters in subpart W. Specifically, reporters in any subpart W industry segment with a well site(s) and/or compressor station(s) required to conduct fugitive emissions monitoring to comply with the NSPS subpart OOOOa will be required to use the calculation methodology based on equipment leak surveys for those components¹¹ under subpart W using the new monitoring methods consistent with the NSPS subpart OOOOa (see section II.C of this preamble). While these are new calculation methodology and equipment leak survey requirements for the subpart W reporting of these components, reporters may meet the survey requirements by counting the actual number of components with fugitive emissions identified through implementation of the NSPS subpart OOOOa as leaks for purposes of subpart W and use

¹¹ See section II.D of this preamble.

those counts with the calculation methodologies specified in 40 CFR 98.233(q) to determine equipment leak emissions for those components.

We received extensive comment regarding the proposed revisions to require facilities in the Onshore Natural Gas Processing industry segment to use the results of the leak surveys conducted to comply with the NSPS subpart OOOOa equipment leak requirements for reporting under subpart W. We are still reviewing those comments and are not taking final action on those revisions at this time.

For other sources of equipment leaks (*i.e.*, those not subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions standards),¹² the amended subpart W requirements depend on whether the component types are currently required to be reported using the calculation methodology based on equipment leak surveys (40 CFR 98.233(q)) or the calculation methodology based on population counts (40 CFR 98.233(r)). For components at facilities in industry segments that are currently required to use the calculation methodology based on equipment leak surveys to comply with subpart W, the EPA is finalizing as proposed that reporters must continue to conduct equipment leak surveys as required by subpart W but may use any monitoring

¹² Except for onshore natural gas processing and natural gas distribution.

method in 40 CFR 98.234(a). If they use either of the two new monitoring methods in 40 CFR 98.234(a)(6) or (7) that are consistent with the NSPS subpart 0000a, then in addition to surveying the components currently subject to the survey requirements in subpart W, they must also survey all other components that are fugitive emissions components in the NSPS subpart 0000a, with limited exceptions, as specified in 40 CFR 98.232 (see sections II.C and II.D of this preamble). If they use any of the monitoring methods currently in 40 CFR 98.234(a)(1) through (5), then in addition to surveying the components currently subject to the survey requirements in subpart W, they may elect to survey the other components specified in 40 CFR 98.232.

For components at facilities in industry segments that are currently required to use the calculation methodology based on population counts, the reporter may continue to use that methodology. Alternatively, the EPA is finalizing as proposed the option that the reporter may elect to use the calculation methodology based on equipment leak surveys (40 CFR 98.233(q)(1)(iv)) in lieu of the calculation methodology based on population counts (40 CFR 98.233(r)). If this option is selected, then the reporter must use any of the monitoring methods in 40 CFR 98.234(a). If they use a monitoring method in 40 CFR 98.234(a)(6) or (7), then they must survey all components

that would otherwise be subject to the calculation methodology based on population counts, and they must also survey all other components that are fugitive emissions components in the NSPS subpart OOOOa, with limited exceptions, as specified in 40 CFR 98.232. If they use any of the monitoring methods currently in 40 CFR 98.234(a)(1) through (5), then in addition to surveying the components that would otherwise be subject to the calculation methodology based on population counts, they may elect to survey the other specified in 40 CFR 98.232. The intent of the new provision in 40 CFR 98.233(q)(1)(iv) is to allow flexibility for reporters currently required to use the calculation methodology based on population counts for components that are not subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions standards.

The burden of using the calculation methodology based on equipment leak surveys will be similar to using the existing subpart W calculation methodology based on population counts, and the results will be more representative of the number of leaks at the facility than the calculation methodology based on population counts. Table 2 of this preamble provides a summary of the equipment leak calculation methodologies and monitoring methods that will be available to each industry segment covered by subpart W under these amendments.

Table 2. Final Equipment Leak Requirements for Subpart W

Subpart W Industry Segments^a	Components Subject to 40 CFR 60.5397a of the NSPS Subpart 0000a		Components Not Subject to 40 CFR 60.5397a of the NSPS Subpart 0000a	
	Subpart W Calculation Methodology^b	Subpart W Monitoring Method for Leak Detection^c	Subpart W Calculation Methodology	Subpart W Monitoring Method for Leak Detection^d
Onshore Petroleum and Natural Gas Production; Onshore Petroleum and Natural Gas Gathering and Boosting	Leak survey (40 CFR 98.233(q))	OGI or Method 21 as specified in the NSPS subpart 0000a	Leak survey (40 CFR 98.233(q)); OR	Any method in 40 CFR 98.234(a)
			Population count (40 CFR 98.233(r))	N/A
Onshore Natural Gas Transmission Compression; Underground Natural Gas Storage: Storage stations, gas service	Leak survey (40 CFR 98.233(q))	OGI or Method 21 as specified in the NSPS subpart 0000a	Leak survey (40 CFR 98.233(q)) ^e	Any method in 40 CFR 98.234(a)
Underground Natural Gas Storage: Storage wellheads, gas service	Leak survey (40 CFR 98.233(q))	OGI or Method 21 as specified in the NSPS subpart 0000a	Leak survey (40 CFR 98.233(q)); OR	Any method in 40 CFR 98.234(a)
			Population count (40 CFR 98.233(r))	N/A
LNG ^f Storage: LNG Service; LNG Import and Export Equipment: LNG Service	Leak survey (40 CFR 98.233(q))	OGI or Method 21 as specified in the NSPS subpart 0000a	Leak survey (40 CFR 98.233(q))	Any method in 40 CFR 98.234(a)
LNG Storage:	Leak survey	OGI or	Leak survey	Any method

Gas Service; LNG Import and Export Equipment: Gas Service	(40 CFR 98.233(q))	Method 21 as specified in the NSPS subpart OOOOa	(40 CFR 98.233(q)); OR	in 40 CFR 98.234(a)
			Population count (40 CFR 98.233(r)) ^g	N/A

^a Onshore Natural Gas Processing and Natural Gas Distribution are not included in this table because we are not revising the calculation methodology and monitoring method for leak detection for these industry segments in this action. The current requirements are still applicable to components in these industry segments.

^b The term "calculation methodology" refers to the procedures used to calculate emissions (e.g., "calculation methodology based on equipment leak surveys" refers to the methodology described in 40 CFR 98.233(q)) and "monitoring method" refers to the technology, test method, or other method of determining whether an individual component is leaking (see 40 CFR 98.234(a)).

^c OGI as specified in the NSPS subpart OOOOa is codified in subpart W at 40 CFR 98.234(a)(6) and Method 21 as specified in the NSPS subpart OOOOa is codified in subpart W at 40 CFR 98.234(a)(7).

^d "Any method in 40 CFR 98.234(a)" means any of the following methods: OGI as specified in 40 CFR 60.18 (40 CFR 98.234(a)(1)), Method 21 with a leak definition of 10,000 parts per million by volume (ppmv) (40 CFR 98.234(a)(2)), Infrared laser beam illuminated instrument (40 CFR 98.234(a)(3)), Acoustic leak detection device (40 CFR 98.234(a)(5)), OGI as specified in the NSPS subpart OOOOa (40 CFR 98.234(a)(6)) or Method 21 with a leak definition of 500 ppmv (40 CFR 98.234(a)(7)).

^e Reporting is required for emissions from valves, connectors, open-ended lines, pressure relief valves, and meters but is optional for instruments and other components unless the reporter elects to use either OGI or Method 21 as specified in the NSPS subpart OOOOa (40 CFR 98.234(a)(6) or (7)), in which case reporting is also required for instruments and other fugitive emissions components.¹³

¹³ See section II.D.1 of this preamble for the EPA's decision on the final subpart W requirements for components not subject to 40 CFR 60.5397a of the NSPS Subpart OOOOa from affected facilities in the Onshore Natural Gas Transmission Compression

^f LNG = liquefied natural gas

^g Reporting is only required for emissions from vapor recovery compressors if this option is chosen.

2. Summary of Comments and Responses

Comment: Several commenters stated that facilities in the Onshore Petroleum and Natural Gas Production and Onshore Petroleum and Natural Gas Gathering and Boosting industry segments should not be required to use the NSPS subpart 0000a results to calculate GHG emissions to comply with subpart W. They stated that the proposed NSPS subpart 0000a leak detection program was limited to one monitoring method, which is inconsistent with the current flexibility for reporters conducting equipment leak surveys for subpart W to choose any monitoring method within 40 CFR 98.234(a). The commenters asserted that this requirement will result in some subpart W reporters having to manage multiple equipment leak survey programs within one facility, especially if the facility is located within a state with a different leak detection program, and this result is overly burdensome. In addition, the commenters stated that the equipment leak survey results will be internally inconsistent if they use different methods, and a facility's emissions could appear to increase one year simply

industry segment, and storage stations in gas service within the Underground Natural Gas Storage industry segment.

because the number of sites subject to the NSPS subpart 0000a increases, requiring the reporter to use the OGI method in the NSPS subpart 0000a for an increased number of components. Instead, the reporters suggested, use of the calculation methodology based on equipment leak surveys, including the selection of monitoring method within 40 CFR 98.234(a), should be voluntary for all facilities not currently required to conduct leak surveys under subpart W.

In contrast, another commenter requested that the EPA require all subpart W reporters to detect leaks using direct equipment leak detection technologies such as OGI. The commenter stated that leak detection using OGI can produce more accurate data than current subpart W methods and that the EPA's approach is consistent with the EPA's stated goals to enhance the rigor and transparency of subpart W data. In addition, the commenter stated that applying OGI detection uniformly across subpart W sources will produce data that is readily comparable across facilities and will allow the EPA to assess the performance of facilities over time.

Response: For facilities that have affected sources required to conduct fugitive emissions monitoring to comply with the NSPS subpart 0000a well site or compressor station fugitive emissions standards, the EPA is finalizing as proposed that these components must meet the subpart W calculation methodology

based on equipment leak survey requirements. In practice, this means reporters can meet these requirements by counting the actual number of components with fugitive emissions identified through implementation of the NSPS subpart OOOOa as leaks for purposes of subpart W. This requirement will achieve the EPA's stated goal of alignment with the NSPS subpart OOOOa and will assist in providing the EPA with a greater understanding of emission reductions.

At this time, we are not requiring all subpart W facilities to perform a leak detection survey using direct equipment leak detection technologies such as OGI. Rather this action is focused on aligning the subpart W requirements, to the extent possible, with the NSPS subpart OOOOa fugitive emission requirements so that facilities may use the results of the NSPS subpart OOOOa-required fugitive emissions monitoring surveys to fulfill subpart W requirements.

The EPA does not agree that a subpart W requirement to use the results of a previously completed leak survey within the subpart W calculation methodology based on equipment leak surveys will result in an undue burden to these reporters. For components subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions standards, there is little to no burden associated with using the number of components found to have fugitive emissions as the number of leaking

components in the subpart W calculation methodology based on equipment leak surveys. The only additional piece of information these reporters need to calculate emissions is the amount of time each component was leaking, and this is a straightforward determination based on the dates of the equipment leak surveys. See section IV.B of this preamble for information and responses to comments related to the EPA's burden estimates for these amendments.

C. Summary of Final Amendments to Monitoring Methods

1. Summary of Final Amendments

The EPA is finalizing the proposal to add OGI, as specified in the NSPS subpart OOOOa, to the list of monitoring methods in 40 CFR 98.234(a). The addition of this specific OGI method to subpart W at 40 CFR 98.234(a)(6) aligns the methods in the two rulemakings and allows subpart W facilities to directly use information derived from the implementation of the fugitive emissions monitoring conducted under the NSPS subpart OOOOa to calculate and report equipment leak emissions to the GHGRP.

The EPA has made changes to the proposed subpart W amendments after consideration of public comment and/or to be consistent with the final revisions made to the corresponding proposed NSPS subpart OOOOa specifications. The proposed subpart W amendments cross-referenced the proposed 40 CFR 60.5397a(b) through (e) and (g) through (i), which included the requirements

to: 1) develop a corporate-wide fugitive emissions monitoring plan; 2) develop a site-specific monitoring plan; 3) observe each fugitive emissions component for fugitive emissions; 4) conduct monitoring surveys semiannually; and 5) adjust the frequency of monitoring surveys based on the percent of the fugitive emissions components detected to have fugitive emissions. For the reasons described below, the final amendments to subpart W for the OGI method cross-reference a portion of the NSPS subpart 0000a requirements to develop the fugitive emissions monitoring plan and the NSPS subpart 0000a requirements to observe each fugitive emissions component for fugitive emissions.

The final NSPS subpart 0000a requires an emissions monitoring plan that covers the affected sources within each company-defined area. This monitoring plan includes information about the survey frequency, monitoring method and instrument selected, repair procedures and timeframes, recordkeeping, and procedures for calibrating the monitoring instrument and verifying that it can detect fugitive emissions at the required levels.

For the final subpart W amendments, the EPA evaluated the NSPS subpart 0000a requirements for the monitoring plan along with the level of detail in the existing monitoring methods in 40 CFR 98.234(a). The EPA determined that information about the

monitoring instrument selected and procedures for calibrating the monitoring instrument and verifying that it can detect fugitive emissions at the required levels is necessary to ensure the OGI monitoring is performed correctly. Therefore, the new OGI detection method in subpart W does include the NSPS subpart 0000a requirement to develop a monitoring plan that describes the OGI instrument (40 CFR 60.5397a(c)(3)) and how the OGI survey will be conducted to ensure that fugitive emissions can be imaged effectively (40 CFR 60.5397a(c)(7)). The EPA determined that the NSPS subpart 0000a survey frequency should not be cross-referenced in subpart W because cross-referencing these frequencies would override the current annual survey requirement in subpart W regardless of whether the use of the new monitoring methods is voluntary or mandatory. The EPA determined that the repair procedures and timeframes should not be cross-referenced because subpart W is part of a reporting program and does not require repair of detected leaks. The EPA also determined that the NSPS subpart 0000a recordkeeping requirements should not be cross-referenced because they include provisions that are not applicable to greenhouse gas reporting, such as records related to repairs. Applicable recordkeeping requirements for all leak detection methods in subpart W are specified at 40 CFR 98.237.

The final site-specific monitoring plan in the NSPS subpart 0000a includes three items specific to the OGI method: 1) a sitemap; 2) a defined observation path for the operator that ensures that all fugitive emissions components are within sight of the path; and 3) a monitoring plan for difficult-to-monitor and unsafe-to-monitor fugitive emissions components. The EPA has reviewed these elements as well and determined not to cross-reference these three elements in subpart W. The observation path and the sitemap ensure that the OGI operator visualizes all of the components that must be surveyed, analogous to requirements in some rules to identify all of the equipment that must be monitored using Method 21 (e.g., 40 CFR 60.486a(e)(1) and 40 CFR 63.162(c)). Subpart W does not include these identification requirements as part of the Method 21 requirements in 40 CFR 98.234(a)(2), so it would be inconsistent to require the observation path as part of the new OGI method. However, while we are not finalizing the explicit requirement to define the observation path the operator will follow during their survey, we do note that 40 CFR part 98, subpart A requires a written GHG monitoring plan for all facilities subject to the GHGRP (see 40 CFR 98.4(g)(5)). Defining an observation path is one item that could be included in the GHG monitoring plan to meet the requirement to describe "procedures and methods that are used for quality assurance... of all... other instrumentation"

used to collect data to comply with the GHGRP (40 CFR 98.3(g)(5)(i)(C)).

The EPA is finalizing the proposed requirement to observe each fugitive emissions component for fugitive emissions (40 CFR 60.5397a(e)).¹⁴ The EPA considers surveying all fugitive emissions components (instead of just the current list of equipment in subpart W for a particular industry segment) to be an inherent part of the NSPS subpart OOOOa OGI method.

The EPA is not cross-referencing the semi-annual (well sites) and quarterly (compressor stations) monitoring frequencies of the final NSPS subpart OOOOa. As noted above, cross-referencing these monitoring frequencies would override the current annual survey requirement in subpart W regardless of whether the use of the new monitoring methods is voluntary or mandatory. The EPA is instead clarifying that for reporters with components subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions requirements and for which surveys are required or elected, the results from each equipment leak survey must be used to calculate GHG emissions for subpart W. The EPA is further clarifying that it is not our intent to require reporters that are not subject to the NSPS subpart OOOOa

¹⁴ See section II.D.1 of this preamble for details regarding the specific NSPS subpart OOOOa-defined fugitive emissions components that are not considered sources of "equipment leaks" in subpart W.

well site or compressor station fugitive emissions requirements to conduct more than one equipment leak survey in a calendar year for purposes of GHGRP reporting, solely because they choose to use the OGI method. The EPA also notes that the proposed NSPS subpart 0000a provisions for adjusting the frequency of equipment leak surveys based on the percent of the fugitive emissions components detected to have fugitive emissions were not included in the final NSPS subpart 0000a and therefore are not cross-referenced in the final subpart W revisions.

Finally, consistent with the final NSPS subpart 0000a, the EPA is finalizing the use of Method 21 as an alternative monitoring method to OGI (as specified in the NSPS subpart 0000a) at 40 CFR 98.234(a)(7). As the EPA noted in the preamble for this proposed revision to subpart W (81 FR 4989; Jan. 29, 2016), the NSPS subpart 0000a proposal identified EPA Method 21 as a monitoring method that may also be used to conduct resurveys of repaired components when fugitive emissions are detected (80 FR 56612 (well sites) and 80 FR 56612 (compressor stations)), and the EPA requested comment on including in the final rule the use of Method 21 for fugitive emissions monitoring as well (80 FR 56638 (well sites) and 80 FR 56643 (compressor stations)). The EPA also made clear in the preamble to these proposed revisions to subpart W that, consistent with the goal of aligning the methods in the two rulemakings (subpart

W and the NSPS subpart 0000a), the EPA expected that the final amendments to subpart W for monitoring methods would reference the final version of the method(s) in the NSPS subpart 0000a, including any changes made to the NSPS subpart 0000a in response to comments on the proposed monitoring method(s) (81 FR 4991). Accordingly, the EPA is finalizing the use of Method 21 as an alternative monitoring method to OGI (as specified in the NSPS subpart 0000a) at 40 CFR 98.234(a)(7).

For reporters that elect to use Method 21 as specified in 40 CFR 98.234(a)(7), either for components that are subject to the NSPS subpart 0000a well site or compressor station fugitive emissions requirements or voluntarily, a leak is detected if an instrument reading of 500 ppmv or greater is measured. As explained in this section regarding the NSPS subpart 0000a OGI monitoring method, we determined that the requirements in 40 CFR 60.5397a(b) are consistent with the requirements of subpart W regarding the development of an emissions monitoring plan; this monitoring plan is required to include verification that the procedures of Method 21 are followed consistent with the requirements in 40 CFR 60.5397a(c)(8). Also, as with the NSPS subpart 0000a OGI method, the EPA is requiring in subpart W observation of each fugitive emissions component for fugitive emissions consistent with the requirements in 40 CFR 60.5397a(e); the EPA considers surveying all fugitive emissions

components to be an inherent part of the NSPS subpart 0000a Method 21 alternative to the OGI method and is consistent with requirements in subpart W to conduct a complete equipment leak survey.

At this time, the EPA is not adding any other monitoring methods to subpart W. We will continue to evaluate equipment leak detection methods and technologies¹⁵ and may amend subpart W to allow the use of additional methods in the future.

2. Summary of Comments and Responses

Comment: Many commenters disagreed with the EPA's proposal to add only the OGI method as specified in the NSPS subpart 0000a to 40 CFR 98.234(a) of subpart W. They asserted that while OGI is an effective method for finding the majority of emissions more quickly than EPA Method 21, it is also a costly technology that cannot quantify emissions. The commenters stated that OGI has other limitations, especially in non-ideal weather conditions; one commenter also stated that use of the OGI camera requires a hot work permit in many instances.

Response: Due to similar comments on the proposed NSPS subpart 0000a, the final NSPS subpart 0000a provides owners and

¹⁵ For example, the EPA has issued a voluntary request for information inviting all parties to provide information on innovative technologies to detect, measure, and mitigate emissions from the oil and gas industry. See 81 FR 46670 (July 18, 2016).

operators of new, modified, or reconstructed well sites or compressor stations with the option of using EPA Method 21 with a repair threshold of 500 ppmv if they elect not to use the OGI method (40 CFR 60.5397a). As discussed in section II.C.1 of this preamble, the final amendments to subpart W provide for the use of EPA Method 21 where a leak is detected for purposes of subpart W if an instrument reading of 500 ppmv or greater is measured. This amendment to subpart W maintains the alignment with the NSPS subpart 0000a well site and compressor station fugitive emissions monitoring requirements, so that reporters can directly use the NSPS subpart 0000a monitoring results to count the number of leaks under subpart W.

Comment: Many commenters stated that leak detection technology is a rapidly growing field and there are many alternative technologies and new technologies in development that may be more accurate and less costly than OGI. Some commenters noted that recent emphasis on CH₄ emissions has caused vendors to focus on CH₄ leak detection. Therefore, according to the commenters, some of those technologies may be better options for the purpose of reporting emissions under subpart W than other leak detection programs. The commenters stated that the EPA's proposal to limit leak surveys to a prescriptive list of methods could limit development of these new technologies.

Commenters provided a variety of suggestions for incorporation of new and emerging technologies into subpart W. Three commenters recommended that the EPA establish a clear process for industry, vendors, and/or the EPA to evaluate the efficacy and accuracy of alternative CH₄ monitoring technologies and approve the use of those technologies. One of these commenters noted that any technology evaluation process should be straightforward and more streamlined than the years-long process needed to approve emissions control devices or continuous emissions monitoring systems. Another of these commenters suggested that the EPA model a technology evaluation process after the vendor testing program for flares and combustors, in which the EPA sets testing protocols and vendors demonstrate that they can meet specific criteria. A fourth commenter suggested that the EPA develop a pilot program to incentivize the accelerated development and deployment of advanced monitoring and detection technologies and to compare the effectiveness of these approaches to periodic, OGI-based surveys.

Response: The EPA agrees with the commenters that emissions monitoring in the oil and gas sector is a field of emerging technology, and major advances are expected in the near future. We are seeing a rapidly growing push to develop and produce low-cost monitoring technologies to find fugitive CH₄ emissions

sooner and at lower levels than current technology allows, thus enhancing the ability of operators to detect fugitive emissions. The EPA agrees that continued development of these cost-effective technologies is important. However, the EPA does not have enough information at this time to evaluate specific technologies to determine if they are equivalent to or better than the monitoring methods provided in and being added to 40 CFR 98.234(a). The EPA may evaluate new options as they become available and determine if they are equivalent to existing methods. For example, the final NSPS subpart OOOOa provides a process for the EPA to determine that a technology can be used as an "alternative means of emission limitation."¹⁶ As technologies are approved through this process, the EPA anticipates that it would contemporaneously incorporate these monitoring methods in subpart W to ensure continued alignment between the NSPS subpart OOOOa and subpart W through future notice and comment rulemaking.

Comment: Multiple commenters addressed the proposed requirement to consider any fugitive emissions observed using OGI during the NSPS subpart OOOOa fugitive emissions monitoring

¹⁶ See 40 CFR 60.5398a titled "What are the alternative means of emission limitations for GHG and volatile organic compounds from well completions, reciprocating compressors, the collection of fugitive emissions components at a well site and the collection of fugitive emissions components at a compressor station?"

as a leak for purposes of subpart W. Most of these commenters objected to the proposal and stated that the definition of a leak for subpart W should be 10,000 ppmv, regardless of the monitoring method used. These commenters asserted that setting the leak definition consistent with the current methods in subpart W would ensure that the new methods result in new information being collected and reported consistently within a facility and consistent with the equipment leak data already in the GHGRP. One commenter noted that defining a leak as emissions at a set concentration is much less subjective than defining a leak as any emissions observed with OGI, and setting the leak definition at 10,000 ppmv rather than a lower concentration would allow operators to focus on finding (and fixing) large leaks instead of spending resources to identify many small leaks that do not contribute much to overall emissions. Another commenter noted that a leak definition of 10,000 ppmv is consistent with the leaker emission factors currently provided in subpart W as well as the proposed new leaker emission factors.

One commenter agreed with a subpart W leak being defined as any fugitive emissions observed using OGI during the NSPS subpart 0000a fugitive emissions monitoring or emissions above 500 ppmv detected via EPA Method 21, but the commenter asserted that the leak definition for any new or emerging technologies

used in a voluntary leak survey should be 5,000 ppmv. The commenter noted that these new technologies are likely to be more sensitive and detect emissions at lower concentrations than OGI, and companies that are employing more accurate instruments should not be "penalized" by having to report more leaks than if they used OGI.

Response: Subpart W already includes OGI and EPA Method 21 with a leak definition of 10,000 ppmv for use by reporters currently required to conduct leak surveys for subpart W. The final amendments also provide for use of these methods by reporters electing to conduct an equipment leak survey voluntarily (*i.e.*, for sources currently required to use the calculation methodology based on population counts that are not subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions requirements). The EPA is adding the methods used for fugitive emissions monitoring in the NSPS subpart OOOOa to 40 CFR 98.234(a), as approved monitoring methods for subpart W leak surveys. This addition facilitates alignment with the NSPS subpart OOOOa and will allow reporters to directly use the NSPS subpart OOOOa monitoring results to count the number of leaks under subpart W. Finally, as noted in section II.C.1 of this preamble, the EPA is not adding any other monitoring methods to subpart W at this time, so it is not

necessary to consider a different leak definition for new or emerging technologies.

The EPA disagrees that using a leak definition other than 10,000 ppmv would undermine the quality of the data reported to the GHGRP. First, subpart W currently includes an OGI monitoring method in 40 CFR 98.234(a)(1). While this monitoring method allows facilities to screen the observed leaks using Method 21, it does not require it, and we do not expect that many reporters actively use dual monitoring methods in their leak surveys to screen all OGI-detected leaks using Method 21.

Second, we are also finalizing, consistent with the final NSPS subpart OOOOa rule, the ability to use Method 21 with a leak definition of 500 ppmv as an alternative to the OGI method. We agree with commenters that the average emissions rate of leaks identified using Method 21 with a leak definition of 500 ppmv would be less than the average emissions rate of leaks identified using Method 21 with a leak definition of 10,000 ppmv. To address this issue, we are also finalizing separate leaker factors that are appropriate for reporters using this alternative method (Method 21 with a leak definition of 500 ppmv). As described in further detail in section II.E.1 of this preamble and in the document "Greenhouse Gas Reporting Rule: Technical Support for Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas

Systems Final Rule” in Docket ID No. EPA-HQ-OAR-2015-0764, these additional emission factors were developed from the same data set that was used to develop the original population emission factors and the proposed leaker factors.¹⁷ Therefore, this additional Method 21 monitoring method, which includes a different leak definition than the other Method 21-based method already available in subpart W at 40 CFR 98.234(a)(2), has been specifically considered and new emission factors are provided in the final rule to ensure that this new monitoring method’s leak definition will not undermine the quality of the emissions reported under subpart W.

If the EPA did not provide the ability for reporters to use the monitoring methods required by the NSPS subpart OOOOa within subpart W, reporters would not be able to use the NSPS subpart OOOOa monitoring results directly; instead, they would have to measure each occurrence of fugitive emissions individually to determine if it is a leak for purposes of subpart W, which would increase the burden for those reporters.

D. Summary of Final Amendments for Components to be Surveyed

1. Summary of Final Amendments

The EPA proposed to align the subpart W equipment components with the NSPS subpart OOOOa definition of “fugitive

¹⁷ This data set was developed from monitoring conducted using Method 21 with a leak definition of 10,000 ppmv.

emissions component," with certain exceptions.¹⁸ After careful consideration of comments, the EPA is finalizing that provision consistent with the final NSPS subpart 0000a definition of "fugitive emissions component" with certain exceptions consistent with the proposal, as described in further detail in this section below. A "fugitive emissions component" is defined in 40 CFR 60.5430a of the final NSPS subpart 0000a to include any component that has the potential to emit fugitive emissions of CH₄ or volatile organic compounds at a well site or compressor station, including but not limited to valves, connectors, pressure relief devices, open-ended lines, flanges, covers and closed vent systems not subject to 40 CFR 60.5411a, thief hatches or other openings on a controlled storage vessel not subject to 40 CFR 60.5395a, compressors, instruments, and meters. Devices that vent as part of normal operations, such as natural gas-driven pneumatic controllers or natural gas-driven pumps, are not fugitive emissions components, as the natural gas discharged from the device's vent is not considered a fugitive emission. Emissions originating from a location other than the vent are considered fugitive emissions.

¹⁸ See 81 FR 4994 for a discussion of the differences between the proposed definition of "fugitive emissions component" and the proposed components subject to equipment leak reporting in subpart W.

As noted in the preamble to the proposed subpart W amendments, some of the components listed in the NSPS subpart 0000a definition of fugitive emissions component are already included as part of the subpart W equipment leaks calculation methodologies (either based on equipment leak surveys or on population counts), while other fugitive emissions components are specifically addressed in other calculation methodologies in subpart W. As part of developing the proposed amendments for subpart W, we compared the list of components in the NSPS subpart 0000a proposed definition of fugitive emissions component with the current methodologies in subpart W to identify which fugitive emissions components were already covered by an existing requirement in subpart W and which fugitive emissions components would be specifically covered in subpart W when using the OGI method as specified in the proposed NSPS subpart 0000a.

Table 3 of this preamble provides a summary of the applicable subpart W calculation methodologies for components subject to the fugitive emissions standards in the final NSPS subpart 0000a. The basis for excluding certain components that are subject to the fugitive emissions standards in the final NSPS subpart 0000a from the final equipment leak survey requirements in 40 CFR 98.233(q) is discussed below.

Table 3. Final Subpart W Calculation Methodology Requirements for Components Subject to the Fugitive Emissions Standards in NSPS subpart OOOOa

Type of component in definition of fugitive emissions component and subject to the fugitive emissions standards in NSPS subpart OOOOa	Applicable GHG emissions calculation methodology in subpart W by industry segment for components that are also subject to the fugitive emissions standards for well sites or compressor stations in the NSPS subpart OOOOa ^a		
	Onshore Petroleum and Natural Gas Production, Onshore Petroleum and Natural Gas Gathering and Boosting	Underground Natural Gas Storage, LNG Storage, LNG Import and Export Equipment	Onshore Natural Gas Transmission Compression
Thief hatches or other openings on controlled storage vessels not subject to 40 CFR 60.5395a	<ul style="list-style-type: none"> • 40 CFR 98.233(j) 	<ul style="list-style-type: none"> • 40 CFR 98.233(q) (use factor for "other" components in Tables W-4A, W-5A, and W-6A to subpart W)^b 	<ul style="list-style-type: none"> • 40 CFR 98.233(k)
Compressors, excluding emissions from vents that are part of normal operations (<i>i.e.</i> , wet seal oil degassing vents)	<ul style="list-style-type: none"> • 40 CFR 98.233(q) for blowdown valve leakage and isolation valve leakage (use factor for "open-ended line" in Table W-1E to subpart W)^b • 40 CFR 98.233(q) for all other leaks from the housing (use factor for "other" components in Table W-1E to 	<ul style="list-style-type: none"> • 40 CFR 98.233(o) for blowdown valve leakage and isolation valve leakage from centrifugal compressors • 40 CFR 98.233(p) for blowdown valve leakage, isolation valve leakage, and rod packing venting from reciprocating compressors • 40 CFR 98.233(q) for 	<ul style="list-style-type: none"> • 40 CFR 98.233(o) for blowdown valve leakage and isolation valve leakage from centrifugal compressors • 40 CFR 98.233(p) for blowdown valve leakage, isolation valve leakage, and rod packing venting from reciprocating compressors • 40 CFR 98.233(q) for

	subpart W) ^b • 40 CFR 98.233(p) (10) for rod packing venting from reciprocating compressors	all other leaks from the housing (use factor for "other" components in Tables W-4A, W-5A, and W-6A to subpart W) ^b	all other leaks from the housing (use factor for "other" components in Table W-3A to subpart W) ^b
All other components	• 40 CFR 98.233(q) (use factors for applicable component types in Table W-1E to subpart W) ^b	• 40 CFR 98.233(q) (use factors for applicable component types in Tables W-4A, W-5A, and W-6A to subpart W) ^c	• 40 CFR 98.233(q) (use factors for applicable component types in Table W-3A to subpart W) ^c

^a Onshore Natural Gas Processing and Natural Gas Distribution are not included in this table because we are not revising the calculation methodology and monitoring method for leak detection for these industry segments in this action. The current requirements are still applicable to components in these industry segments.

^b The leaker emission factors for "other" components are being finalized in this revision.

^c The leaker emission factors include both factors in the current rule and factors that are being finalized in this action, depending on the specific component and the monitoring method used to conduct the survey, as discussed in section II.E.1 of this preamble.

At proposal, we determined that the subpart W calculation methodology for storage tanks in 40 CFR 98.233(j) already includes emissions from thief hatches or other openings on storage vessels in the Onshore Petroleum and Natural Gas Production and Onshore Petroleum and Natural Gas Gathering and Boosting industry segments. However, we requested comment on whether the agency should consider separate approaches for controlled storage tanks and uncontrolled storage tanks. The

final definition of "fugitive emissions component" in the NSPS subpart OOOOa (40 CFR 60.5430a) includes only thief hatches or other openings on a controlled storage vessel; it does not specifically list openings on uncontrolled storage vessels. We reviewed the subpart W calculation methodology specifically for storage tanks with a vapor recovery system (40 CFR 98.233(j)(4)) and storage tanks with a flare (40 CFR 98.233(j)(5)). The procedure for determining emissions from a tank with a vapor recovery system instructs reporters to adjust the storage tank emissions downward by the magnitude of emissions recovered using a vapor recovery system as determined by engineering estimate based on best available data (40 CFR 98.233(j)(4)(i)). The procedure for determining emissions from a tank with a flare references 40 CFR 98.233(n), which instructs reporters to use engineering calculations based on process knowledge, company records, and best available data to determine the flow to the flare if the flare does not have a continuous flow measurement device. If a reporter sees fugitive emissions from a thief hatch or other opening on a controlled storage vessel during an equipment leak survey conducted using OGI, the reporter should consider that information as part of the "best available data" used to calculate emissions from that storage tank. Therefore, we have concluded that emissions from thief hatches or other openings on storage vessels in the Onshore Petroleum and Natural

Gas Production and Onshore Petroleum and Natural Gas Gathering and Boosting industry segments are already included in the subpart W storage tank emission calculations in 40 CFR 98.233(j) and are finalizing, consistent with the proposal, that they are not to be considered when determining emissions from equipment leaks for purposes of subpart W.

We are also finalizing as proposed the exclusion of thief hatches and other openings on transmission storage tanks from the equipment leak reporting requirements.¹⁹ We note that, for purposes of subpart W reporting, a leaking thief hatch or other opening is functionally a secondary vent, and thus subject to annual screening on an uncontrolled tank according to 40 CFR 98.233(k) (1). If screening shows vapors from the thief hatch or opening are continuous for 5 minutes, then a method in 40 CFR 98.233(k) (2) must be used to quantify the leak rate, and this amount must be combined with any other vent leak rates for reporting.

We are also finalizing the proposed distinction between equipment leak emissions and compressor emissions. Specifically, for centrifugal compressors, emission sources include wet seal

¹⁹ The exceptions to equipment leak reporting requirements were included in Tables W-1E and W-3 through W-6 of the proposal. The final rule moves these exceptions to 40 CFR 98.232, to increase clarity and reduce confusion while achieving the same purpose and effect.

oil degassing vents (for centrifugal compressors with wet seals), blowdown valve leakage, and isolation valve leakage. For reciprocating compressors, emission sources include reciprocating compressor rod packing vents, blowdown valve leakage, and isolation valve leakage.

For compressors in the Onshore Petroleum and Natural Gas Production and the Onshore Petroleum and Natural Gas Gathering and Boosting industry segments under subpart W, the compressor methodologies only cover emissions from centrifugal compressor wet seal oil degassing vents and from reciprocating compressor rod packing vents. Thus, the EPA is finalizing as proposed, for these industry segments, that blowdown valve leakage and isolation valve leakage are considered equipment leaks (*i.e.*, open-ended lines), and finalizing as proposed that emissions from centrifugal compressor wet seal oil degassing vents and from reciprocating compressor rod packing vents are not considered equipment leaks when using the calculation methodology based on equipment leak surveys in 40 CFR 98.233(q).²⁰

²⁰ 40 CFR 98.233(q) specifies which subsections in 40 CFR 98.232 (*i.e.*, which components) must follow the calculation methodology based on equipment leak surveys in 40 CFR 98.233(q), and 40 CFR 98.232 subsections identify exceptions from the list of components for which equipment leak reporting is required.

For the Onshore Natural Gas Transmission Compression, Underground Natural Gas Storage, LNG Storage, and LNG Import and Export Equipment segments, subpart W requires reporters to make "as found" or continuous measurements for compressor emission sources, so the reporters will have either direct measurement data or site-specific emission factors by which to calculate emissions from all of the compressor sources listed above (*i.e.*, wet seal oil degassing vents for centrifugal compressors with wet seals, rod packing vents for reciprocating compressors, and blowdown valve leakage and isolation valve leakage for both centrifugal and reciprocating compressors). Therefore, we are finalizing as proposed to exclude these compressor emission sources from the requirements in the calculation methodology based on equipment leak surveys so that reporters do not double-count emissions from these sources in their GHGRP reports.

Finally, as noted in section II.C.1 of this preamble, we are finalizing the proposed determination that for purposes of subpart W, all other fugitive emissions components as defined in the NSPS subpart 0000a not specifically identified above (*e.g.*, thief hatches or other openings on a controlled storage vessel, compressor sources with explicit calculation methodologies in subpart W) will be considered equipment components when conducting an equipment leak survey using the OGI method as specified in the NSPS subpart 0000a or EPA Method 21 with a leak

definition of 500 ppmv. In other words, we consider the provision requiring monitoring of fugitive emissions components as defined in the NSPS subpart 0000a in 40 CFR 60.5397a(e) to be an inherent part of the NSPS subpart 0000a OGI method and EPA Method 21 with a leak definition of 500 ppmv. Therefore, if a reporter with components not subject to the NSPS subpart 0000a well site or compressor station fugitive emission requirements elects to use the NSPS subpart 0000a OGI method or EPA Method 21 with a leak definition of 500 ppmv for purposes of subpart W, they are also electing to survey these additional components.

2. Summary of Comments and Responses

Comment: Several commenters stated that the NSPS subpart 0000a proposed definition of "fugitive emissions component" is too expansive. Because it includes many more emission sources than a more traditional definition of equipment, the commenters asserted that it is inconsistent with current subpart W requirements. The commenters stated that aligning subpart W with the NSPS subpart 0000a in this respect will complicate the question of which components must be monitored at subpart W facilities and will result in facilities having higher numbers of leaks than they would have if they used any other equipment leak detection method in subpart W. Some commenters stated that even for well sites and compressor station sites subject to the NSPS subpart 0000a, component types considered to be equipment

under subpart W should be consistent with a more traditional definition of equipment. Other commenters requested that equipment under subpart W only include component types for which the EPA can provide specific population factors and leaker emission factors.

Response: As noted in section II.D.1 of this preamble, the final definition of "fugitive emissions component" in the NSPS subpart OOOOa (40 CFR 60.5430a) does not list as many explicit individual component types, as originally proposed. The EPA is finalizing, with the exceptions discussed in section II.D.1 of this preamble and consistent with the extent proposed, this alignment with the NSPS subpart OOOOa, so that reporters may directly use the NSPS subpart OOOOa monitoring results to count the number of leaks under subpart W. Reporters using the calculation methodology based on equipment leak surveys for components not subject to the NSPS subpart OOOOa may choose which monitoring method to use. If a reporter chooses to use one of the monitoring methods listed in 40 CFR 98.234(a)(1) through (5), that reporter would use the current list of equipment components for the appropriate industry segment in 40 CFR 98.232 (e.g., the list of equipment at 40 CFR 98.232(e)(7) for the Onshore Natural Gas Transmission Compression industry segment). If a reporter chooses to use the OGI method as specified in the NSPS subpart OOOOa or EPA Method 21 with a leak definition of

500 ppmv, the reporter would use both the current list and the newly added list of equipment components for the appropriate industry segment in 40 CFR 98.232, which in conjunction include the NSPS subpart OOOOa definition of "fugitive emissions component" in 40 CFR 60.5430a with the exceptions discussed in section II.D.1 of this preamble (e.g., the list of equipment at 40 CFR 98.232(e)(7) and (8) for the Onshore Natural Gas Transmission Compression industry segment).

E. Summary of Final Amendments to Leaker Emission Factors and the Calculation Methodology Based on Equipment Leak Surveys

1. Summary of Final Amendments

To quantify emissions from leaking equipment components, subpart W includes leaker emission factors for each component type in each industry segment currently required to use the calculation methodology based on equipment leak surveys. In contrast to the population emission factors, which are multiplied by the total facility component counts, leaker emission factors are multiplied by the actual number of leaks for each component type, as identified by the equipment leak survey. These amendments increase the component types that are required or may elect to use the calculation methodology based on equipment leak surveys, including most of the component types currently using the subpart W calculation methodology based on

population counts.²¹ Therefore, new leaker emission factors are being added so that reporters can calculate their GHG emissions for these new component types.

Specifically, the EPA proposed to add new sets of leaker emission factors to subpart W for: (1) the Onshore Petroleum and Natural Gas Production industry segment; (2) the Onshore Petroleum and Natural Gas Gathering and Boosting industry segment; (3) storage wellheads in gas service in the Underground Natural Gas Storage industry segment; (4) LNG storage components in gas service in the LNG Storage industry segment; and (5) LNG terminals components in gas service for the LNG Import and Export Equipment industry segment. For industry segments that already include a set of leaker emission factors, the EPA also proposed to expand that set of leaker emission factors to include certain additional components to better align with the definition of fugitive emissions components in the NSPS subpart OOOOa. See the document "Greenhouse Gas Reporting Rule: Technical Support for Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems" in Docket Item No. EPA-HQ-OAR-2015-0764-0028, for more

²¹ The NSPS subpart OOOOa fugitive emission requirements do not apply to fugitive emissions components in the Natural Gas Distribution industry segment.

information on the development of the proposed leaker emission factors.

We are finalizing the leaker emission factors for the Onshore Petroleum and Natural Gas Production and the Onshore Petroleum and Natural Gas Gathering and Boosting industry segments as proposed, with clarifications for flanges and connectors noted below. We are also finalizing the following leaker emission factors as proposed: (1) the leaker emission factors for "other" components in Tables W-3A, W-4A, W-5A, and W-6A to subpart W; (2) the leaker emission factors for storage wellhead equipment in gas service within Table W-4A to subpart W; and (3) the leaker emission factors for equipment in gas service for LNG storage components within Table W-5A to subpart W and for LNG terminal components within Table W-6A to subpart W. We are also finalizing the proposal to expand the existing leaker emission factor for meters to also include instruments in Tables W-3A and W-4A to subpart W for the Onshore Natural Gas Transmission Compression and Underground Natural Gas Storage industry segments, respectively. All but one of the proposed leaker factors for flanges in Tables W-3 through W-6 to subpart W (Tables W-3A, W-4A, W-5A, and W-6A to subpart W in these final amendments) were the same as the leaker factors for connectors; the exception was for flanges in gas service associated with storage wellheads at Underground Natural Gas Storage facilities,

which had a proposed leaker factor that differed from the proposed leaker factor for connectors in the same service. Flanges are a type of connector, which means the proposed flange factors that were identical to the existing connector factors were redundant. Therefore, we have not finalized the proposed separate factors for flanges where the factor was the same as the factor for connectors and are finalizing that flanges must use the final connector factor, meaning the effect of the final amendments is the same as the proposal. The separate factors for connectors and flanges for storage wellheads in gas service at Underground Natural Gas Storage facilities are finalized as proposed, but to clarify that the factor for connectors applies only to all types of connectors other than flanges, the component name has been changed from "connector" in the proposal to "connector (other)" in Table W-4A of the final amendments. This change also makes the terminology in Table W-4A consistent with the terminology in Tables W-1A and W-1E, which also specify factors for flanges that differ from the factors for other types of connectors.

We are not finalizing the proposed addition of pumps to the leaker factors in Table W-2 for the Onshore Natural Gas Processing industry segment. As described in section II.B.1 of this preamble, we are not taking final action on the Onshore Natural Gas Processing revisions at this time.

In addition to finalizing nearly all of the proposed leaker factors, we are also finalizing an additional set of emission factors corresponding to the average emissions rates of components identified using Method 21 with a leak definition of 500 ppmv. The proposed leaker factors were developed based on Method 21 monitoring using a leak definition of 10,000 ppmv and were to be applied by all reporters regardless of the leak survey monitoring method used. As noted in section II.C of this preamble, the final NSPS subpart 0000a includes an additional alternative that allows reporters to use Method 21 with a leak definition of 500 ppmv. On average, the emissions from a leak identified with a Method 21 reading above 500 ppmv are less than the emissions from a leak identified with a Method 21 reading of 10,000 ppmv or higher. Consequently, the leaker factor (which is the average emissions rate) for leaks identified when using a leak definition of 500 ppmv is smaller than the leaker factor for leaks identified when using a leak definition of 10,000 ppmv. Therefore, in order to use the NSPS subpart 0000a survey results directly to calculate equipment leak emissions for subpart W when Method 21 with a leak definition of 500 ppmv is used, leaker factors were developed consistent with the average emissions rate of a "leak" defined as a measurement reading of 500 ppmv or more using Method 21. We developed these new leaker factors using data from EPA's Protocol for Equipment Leak

Emissions Estimates²² consistent with the data used to develop the proposed leaker factors for Onshore Petroleum and Natural Gas Production and the Onshore Petroleum and Natural Gas Gathering and Boosting industry segments. See the document "Greenhouse Gas Reporting Rule: Technical Support for Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems Final Rule" in Docket ID No. EPA-HQ-OAR-2015-0764, which provides more information on the development of the final leaker emission factors. The inclusion of leaker factors specific to Method 21 with a leak definition of 500 ppmv is consistent with our proposal to align subpart W calculation methodologies with the monitoring requirements in the NSPS subpart OOOOa.

We are also finalizing the proposed amendments to the time variable $T_{p,z}$ in Equation W-30 to clarify the total time a surveyed component found leaking is assumed to be leaking and operational. The previous language for the definition of the time variable specifically considers a first leak survey and a last leak survey in the year but does not provide specific language with respect to the duration of any "intermediate" survey conducted between the first and last survey. Therefore,

²²U.S. Environmental Protection Agency. *Protocol for Equipment Leak Emissions Estimates*. EPA-453/R-95-017. November 1995. Docket Item No. EPA-HQ-OAR-2009-0927-0043.

the EPA proposed to amend the definition of the time variable to clarify how to determine the duration of a leak if more than two leak surveys are conducted in a year and to instruct reporters to sum the individual durations to determine the total time the component was leaking during the year.

The EPA is finalizing this amendment as proposed. The amendments to the time variable $T_{p,z}$ define each equipment leak survey as covering a unique, non-overlapping time period and we are clarifying our intent that a leak detected in the first or any intermediate survey is not considered to continue leaking past the date of that specific equipment leak survey. For the last survey conducted in the calendar year, the leak is assumed to continue until the end of the year. For example, if a reporter conducts three equipment leak surveys in a calendar year and a particular component is found to be leaking in the first and second surveys but not the third, the total leak duration is the sum of the time from January 1 to the date of the second survey. If a reporter conducts three equipment leak surveys in a calendar year and a particular component is found to be leaking in the first and last surveys but not the second, then the total leak duration is the sum of the time from January 1 to the date of the first survey and the time from the date of the second survey to December 31.

See "Response to Public Comments on Greenhouse Gas Reporting Rule: Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems" in Docket ID No. EPA-HQ-OAR-2015-0764 for all comments and the EPA's responses to comments on other aspects of the time variable $T_{p,z}$ in Equation W-30.

Finally, 40 CFR 98.233(q) includes a provision requiring reporters to conduct one equipment leak survey in a calendar year (which must include "all component types" subject to 40 CFR 98.233(q)) or multiple "complete" equipment leak surveys in a calendar year. In response to comments as part of the 2010 subpart W final rule, the EPA noted that subsequent equipment leak surveys should be "conducted for an entire facility."²³

The EPA has reviewed how this interpretation could interact with these final amendments for components subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions requirements and finds that additional clarification is necessary. For example, a facility in the Onshore Petroleum and Natural Gas Production industry segment or the Onshore Petroleum and Natural Gas Gathering and Boosting industry segment may have

²³ U.S. Environmental Protection Agency. *Mandatory Greenhouse Gas Reporting Rule Subpart W - Petroleum and Natural Gas: EPA's Response to Public Comments*. November 2010. Docket Item No. EPA-HQ-OAR-2009-0923-3608. Response to Comment Number EPA-HQ-OAR-2009-0923-1014-9, pp. 1281-1282.

some components that are subject to the NSPS subpart 0000a well site or compressor station fugitive emissions requirements and some components that are not. In such a case, multiple equipment leak surveys would be conducted for the components subject to the NSPS subpart 0000a well site or compressor station fugitive emissions requirements, to fulfill the requirements of the NSPS subpart 0000a for those components, that would be consistent with subpart W monitoring methods under these final revisions.

However, under the current interpretation of a "complete" survey, it would appear that these reporters would either: 1) be unable to use the NSPS subpart 0000a fugitive emissions monitoring results as directed, because they did not survey all components at the facility; or 2) be forced to monitor all components at the facility on the same frequency as the components subject to the NSPS subpart 0000a well site or compressor station fugitive emissions requirements to meet the subpart W requirement to use all additional leak surveys conducted in accordance with NSPS 0000a. The first interpretation would render these final amendments useless, and the second interpretation would increase the burden beyond the EPA's intentions, and could also have unintended consequences for the components subject to the NSPS subpart 0000a (e.g., a subpart W facility with some components subject to the NSPS subpart 0000a well site fugitive emissions requirements and

others subject to the NSPS subpart 0000a compressor station fugitive emissions requirements could end up being required to monitor the fugitive emissions components at a well site four times a year instead of twice). Therefore, the EPA is clarifying in 40 CFR 98.233(q)(2)(i) that any monitoring conducted pursuant to and in compliance with the NSPS subpart 0000a well site or compressor station fugitive emissions requirements constitutes a "complete" survey for purposes of subpart W and must be used for subpart W reporting. The EPA is further clarifying that, to meet the requirements of 40 CFR 98.233(q), at least one equipment leak survey must be conducted in a calendar year.

2. Summary of Comments and Responses

Comment: Several commenters addressed the EPA's proposed leaker emission factors. Some of the commenters indicated that the EPA/Gas Research Institute (GRI) data set upon which the proposed factors are based is an older data set and asserted that it may not be representative of operating practices and procedures that have changed significantly over the past 20 years. In addition, the commenters stated that the EPA/GRI data set includes a limited population of measurements, so the proposed leaker emission factors may not account for operational variability on a regional or national level. Some commenters requested that the EPA consider newer studies, including those cited in "Greenhouse Gas Reporting Rule: Technical Support for

Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems” (Docket Item No. EPA-HQ-OAR-2015-0764-0028) either instead of or in combination with the EPA/GRI data set.

Several commenters urged the EPA to work with the regulated community to improve the default leaker emission factors in subpart W. One commenter noted that the proposed leaker emission factors may be a viable interim solution but recommended that the EPA analyze more robust data sets consisting of the combined results of all studies for each industry segment and evaluate whether the subpart W leaker emission factors should be revised.

Response: As described in the preamble to the proposed rule and the document “Greenhouse Gas Reporting Rule: Technical Support for Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems Final Rule” (Docket ID No. EPA-HQ-OAR-2015-0764), the EPA has determined that the EPA/GRI data set is appropriate to base leaker emission factors in these subpart W amendments. We note that the EPA/GRI data set provides sufficient data to develop leaker emission factors and that using this data set for the leaker emission factors provides consistency with the population emission factors used by reporters that do not conduct equipment leak surveys.

The EPA agrees that there are numerous recent studies that could be used to either replace or supplement the EPA/GRI study data, and many of these are described in the technical support document. The EPA evaluated these other studies and found that the leaker emission factors determined from these data sets agreed reasonably well with the leaker emission factors developed from the EPA/GRI data set, suggesting that the EPA/GRI leaker emission factors are still valid. Commenters that supported a different basis for the leaker emission factors than the EPA/GRI data set did not provide specific information explaining why another study would be a better basis or address any of the specific considerations listed above, although the comments received suggest that stakeholders are interested in further involvement in the assessment of the available data. Therefore, for the reasons stated in the preamble to the proposed rule and the document "Greenhouse Gas Reporting Rule: Technical Support for Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems Final Rule" in Docket ID No. EPA-HQ-OAR-2015-0764, the EPA is finalizing the leaker emission factors as proposed.

The EPA appreciates the commenters' interest in providing a thorough review of the available study data to develop an accurate set of leaker emission factors. The EPA is committed to working with stakeholders to ensure that GHGRP requirements and

calculation methods are based upon the most robust data available. If the EPA determines that revisions to the subpart W leaker emission factors are appropriate in the future based on additional information, we anticipate that we will propose to amend the rule accordingly.

Comment: Numerous commenters stated that reporters should be allowed to use site-specific leak quantification data if available, either directly for each individual leak (*i.e.*, direct measurement data) or to develop their own leaker emission factors on a facility-specific, company-specific, or product-specific basis. Most of these commenters supported the EPA's proposal to include default leaker emission factors, but stated that reporters should not be limited to using them if the facility has more accurate, site-specific information. Some commenters further noted that the site-specific data reported to the GHGRP could be used to improve the default leaker emission factors in the future. One commenter also requested that the EPA require quantification of any leak that a reporter elects not to repair.

Response: The EPA did not propose and, after review and consideration of comments, is not finalizing provisions allowing reporters to use site-specific information to calculate equipment leak emissions for subpart W. While we agree that direct measurement has the potential to provide more accurate

emissions data than using emission factors, we would need to develop criteria and guidelines for using direct measurement data consistently across subpart W reporters for calculating equipment leak emissions. Similarly, we agree that using site-specific emission factors can provide more accurate emissions data than using default emission factors, but a robust set of requirements would be needed for reporters to use when developing their own emission factors to ensure that those factors are as unbiased and representative as possible. In addition, if reporters are using direct measurement or their own emission factors, we would most likely need to amend the reporting requirements (e.g., to require reporters to provide site-specific emission factors), and we would need to consider whether any other amendments would be needed to enable us to review and verify reported data. In either of these cases, we would provide the opportunity for the public to comment on those amended requirements before finalizing them within subpart W.

F. Summary of Final Amendments to Reporting Requirements

1. Summary of Final Amendments

The EPA is finalizing largely as proposed the new reporting requirements for facilities conducting equipment leak surveys under subpart W. Reporters in the Onshore Petroleum and Natural Gas Production and the Onshore Petroleum and Natural Gas Gathering and Boosting industry segments, reporters with storage

wellheads in the Underground Natural Gas Storage industry segment, and reporters with components in gas service in the LNG Storage and LNG Import and Export Equipment industry segments that begin using the calculation methodology based on equipment leak surveys must report the information currently listed in 40 CFR 98.236(q)(1) and (2), which includes the number of equipment leak surveys, component types, number of leaking components, average time the components were assumed to be leaking, and annual CO₂ and CH₄ emissions. Facilities that conduct surveys using the new monitoring methods in 40 CFR 98.234(a)(6) or (7) must also report the data elements in 40 CFR 98.236(q)(2) for additional component types specified in 40 CFR 98.232. Reporters may elect to report the data elements in 40 CFR 98.236(q)(2) for the additional component types if they conduct surveys using a monitoring method in 40 CFR 98.234(a)(1) through (5).

The data elements in 40 CFR 98.236(q)(1) and (2) are already required to be reported by facilities conducting equipment leak surveys in the Onshore Natural Gas Transmission Compression, Underground Natural Gas Storage (storage stations), and LNG Storage and LNG Import and Export Equipment (components in LNG service) industry segments. However, facilities in those segments conducting equipment leak surveys using the new OGI method or Method 21, as specified in the NSPS subpart OOOOa (finalized in subpart W as 40 CFR 98.234(a)(6) or (7)), must

begin reporting the data elements in 40 CFR 98.236(q)(2) for component types with the new leaker emission factors, including component types that are not currently subject to reporting. Facilities conducting equipment leak surveys using a monitoring method in 40 CFR 98.234(a)(1) through (5) may elect to begin reporting the data elements in 40 CFR 98.236(q)(2) for other components that are not currently subject to reporting.

In addition, the EPA is finalizing as proposed three new reporting requirements for facilities conducting equipment leak surveys in all of the above segments as well as the Onshore Natural Gas Processing and Natural Gas Distribution segments. First, facilities in those segments will be required to report the monitoring method(s) in 40 CFR 98.234(a) used to conduct the survey(s). Second, facilities in the above segments except for Onshore Natural Gas Processing and Natural Gas Distribution will be required to indicate whether any of their component types are subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions requirements. Finally, facilities with components for which the calculation methodology based on equipment leak surveys is optional (*e.g.*, facilities in the Onshore Petroleum and Natural Gas Production segment) will be required to indicate whether they elected to use the calculation methodology based on equipment leak surveys for any of their component types at the facility.

Additionally, in reviewing specific reporting requirements while responding to public comments, we recognized that the reporting requirements at 40 CFR 98.236(r)(3)(ii) were unclear, and could be misinterpreted with respect to how this reporting element relates to the calculated emissions. Therefore, we are revising 40 CFR 98.236(r)(3)(ii) by adding the phrase "... for which equipment leak emissions are calculated using the methodology in § 98.233(r)" to clarify our original intent that the major equipment counts reported under this requirement are specific to equipment for which emissions are calculated using the population count methodology.

2. Summary of Comments and Responses

Comment: Two commenters addressed the proposed requirement in 40 CFR 98.236(q)(1)(iii) to indicate whether any component types at a facility are subject to the NSPS subpart 0000a. One commenter opposed the addition, stating that it is overly burdensome to require reporters to delineate reporting of emission sources subject to the NSPS subpart 0000a, especially if this is intended to be a numeric response regarding the number of individual components subject to the NSPS subpart 0000a. Another commenter asserted that it is not clear if the response to proposed 40 CFR 98.236(q)(1)(iii) is a single yes or no for each facility or if the EPA will be expecting a yes or no response for each component type.

Response: In the final rule, the EPA has revised the proposed requirement in 40 CFR 98.236(q)(1)(iii) (indicate whether any component types are subject to the NSPS subpart 0000a) to be clear that the EPA expects only one yes or no response for an entire facility. While the EPA understands that the number of leaking components and equipment leak emissions may increase as the number of components subject to the NSPS subpart 0000a increases, this response will allow the EPA to provide transparent data related to changes in emissions for facilities with components subject to the NSPS subpart 0000a well site or compressor station fugitive emissions requirements over time. This data element will also support verification that the appropriate GHGRP monitoring method was used by the facility.

III. Confidentiality Determinations

A. Summary of Final Confidentiality Determinations for New Subpart W Data Elements

As noted in the proposed rule, we are applying the same approach as previously used for making confidentiality determinations for data elements reported under the GHGRP. In the "Confidentiality Determinations for Data Required Under the Mandatory Greenhouse Gas Reporting Rule and Amendments to Special Rules Governing Certain Information Obtained Under the Clean Air Act" (hereafter referred to as "2011 Final CBI

Rulemaking") (76 FR 30782, May 26, 2011), the EPA grouped part 98 data elements for which EPA was determining confidentiality status through that rulemaking into 22 data categories (11 direct emitter data categories and 11 supplier data categories) with each of the 22 data categories containing data elements that are similar in type or characteristics. The EPA then made categorical confidentiality determinations for eight direct emitter data categories and eight supplier data categories and applied the categorical confidentiality determination to all data elements assigned to the category. Of these data categories with categorical determinations, the EPA determined that four direct emitter data categories are comprised of those data elements that meet the definition of "emission data," as defined at 40 CFR 2.301(a), and are, therefore, not entitled to confidential treatment under section 114(c) of the CAA.²⁴ The EPA determined that the other four direct emitter data categories and the eight supplier data categories do not meet the definition of "emission data." For these data categories that are determined not to be emission data, the EPA determined categorically that data in three direct emitter data categories

²⁴ Direct emitter data categories that meet the definition of "emission data" in 40 CFR 2.301(a) are "Facility and Unit Identifier Information," "Emissions," "Calculation Methodology and Methodological Tier," and "Data Elements Reported for Periods of Missing Data that are not Inputs to Emission Equations."

and five supplier data categories are eligible for confidential treatment as CBI, and that the data in one direct emitter data category and three supplier data categories are ineligible for confidential treatment as CBI. For two direct emitter data categories, "Unit/Process 'Static' Characteristics that Are Not Inputs to Emission Equations" and "Unit/Process Operating Characteristics that Are Not Inputs to Emission Equations," and three supplier data categories, "GHGs Reported," "Production/Throughput Quantities and Composition," and "Unit/Process Operating Characteristics," the EPA determined in the 2011 Final CBI Rulemaking that the data elements assigned to those categories are not emission data, but the EPA did not make categorical CBI determinations for them. Rather, the EPA made CBI determinations for each individual data element included in those categories on a case-by-case basis taking into consideration the criteria in 40 CFR 2.208. The EPA did not make a final confidentiality determination for data elements assigned to the inputs to emission equation data category (a direct emitter data category) in the 2011 Final CBI Rulemaking. However, the EPA has since proposed and finalized an approach for addressing disclosure concerns associated with inputs to emissions equations.²⁵

²⁵ Revisions to Reporting and Recordkeeping Requirements, and

In the proposed rule, we assigned the nine proposed new or substantially revised data elements to the appropriate direct emitter data categories created in the 2011 Final CBI Rulemaking based on the type and characteristics of each data element. For the seven data elements the EPA assigned to a direct emitter category with a categorical determination, the EPA proposed that the categorical determination for the category be applied to the proposed new or substantially revised data elements, as shown in Table 4 of this preamble. For the two data elements assigned to the "Unit/Process Operating Characteristics that Are Not Inputs to Emission Equations," we proposed confidentiality determinations on a case-by-case basis taking into consideration the criteria in 40 CFR 2.208, consistent with the approach used for data elements previously assigned to these two data categories, as shown in Table 5 of this preamble. Refer to the preamble to the proposed rule (81 FR 4987; January 29, 2016) for additional information regarding the proposed confidentiality determinations.

With consideration of the information provided by commenters, the EPA is finalizing the confidentiality determinations as proposed. Specifically, the EPA is finalizing

the proposed determination for each of the nine new or substantially revised data elements to be designated as "emission data" or "not CBI."

Table 4. Final Data Category Assignments and Confidentiality Determinations for New Data Elements Assigned to Categories with Categorical Determinations

Citation	Data Element	Final Category Assignment	Categorical Determination (as Established in 2011)²⁶
§98.236(q)(1)(i)	The number of complete equipment leak surveys performed during the calendar year.	Test and Calibration Methods	Not Emission Data and Not CBI
§98.236(q)(1)(iii)	Whether any component types were subject to 40 CFR part 60, subpart 0000a.	Facility and Unit Identifier Information	Emission Data
§98.236(q)(1)(iv)	Whether you elected to comply with § 98.233(q) per § 98.233(q)(1)(iii).	Facility and Unit Identifier Information	Emission Data
§98.236(q)(1)(v)	Each type of method described in §98.234(a) that was used to conduct leak surveys.	Test and Calibration Methods	Not Emission Data and Not CBI
§98.236(q)(2)(i)	For each component type that is located at your facility, component type.	Facility and Unit Identifier Information	Emission Data
§98.236(q)(2)(iv)	For each component type that is located at your facility, annual CO ₂ emissions, in metric tons CO ₂ .	Emissions	Emission Data

²⁶ The categorical confidentiality determinations for the data categories listed in this table were finalized on May 26, 2011 (see 76 FR 30782).

Citation	Data Element	Final Category Assignment	Categorical Determination (as Established in 2011)²⁶
§98.236(q) (2) (v)	For each component type that is located at your facility, annual CH ₄ emissions, in metric tons CH ₄ .	Emissions	Emission Data

Table 5. Final Confidentiality for Data Elements Assigned to the “Unit/Process Operating Characteristics That Are Not Inputs to Emission Equations” Data Category

Citation	Data Element	Final Confidentiality Determination and Rationale
§ 98.236(q) (2) (ii)	For each component type that is located at your facility, total number of the surveyed component type that were identified as leaking in the calendar year (“x _p ” in Equation W-30).	<p>Not Emission Data (Categorical Determination as Established in 2011).</p> <p>Not CBI. The term “equipment leaks” refers to those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally-equivalent opening. Leaking components at a facility may have a correlation to the level of maintenance at a facility. However, there is no direct correlation between the level of maintenance and process efficiency, i.e., a higher number of leaks in one facility do not indicate that the processes have been running longer or more frequently than those processes at another facility that has a lower number of leaks. Furthermore, Department of Transportation (DOT)</p>

Citation	Data Element	Final Confidentiality Determination and Rationale
		<p>regulations require natural gas distribution companies and transmission pipeline companies to conduct periodic leak detection and fix any leaking equipment. The number of leaks detected and fixed is reported to the DOT and is publicly available. Finally, 40 CFR part 60, subpart 0000a requires reporting for each component with visible emissions at affected well sites and compressor station sites. The EPA is finalizing that this data element is not confidential; and that it will be considered "not CBI."</p>
<p>§ 98.236(q) (2) (iii)</p>	<p>For each component type that is located at your facility, average time the surveyed components are assumed to be leaking and operational, in hours (average of "T_{p,z}" from Equation W-30).</p>	<p>Not Emission Data (Categorical Determination as Established in 2011)</p> <p>Not CBI. This data element will provide information on the amount of time operational components were found to be leaking. This information provides little insight into maintenance practices at a facility because it does not identify the cause of the leaks or the nature and cost of repairs. Therefore, this information would not be likely to cause substantial competitive harm to reporters. For this reason, we are finalizing the average time operational components were found leaking be designated as "not CBI."</p>

B. Summary of Comments and Responses

This section summarizes the major comments and responses related to the proposed categorical assignments and confidentiality determinations. See "Response to Public Comments on Greenhouse Gas Reporting Rule: Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems" in Docket ID No. EPA-HQ-OAR-2015-0764 for a complete listing of all comments and responses. See the memorandum "Final Data Category Assignments and Confidentiality Determinations for Data Elements in the 'Greenhouse Gas Reporting Rule: Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems; Final Rule'" in Docket ID No. EPA-HQ-OAR-2015-0764 for a complete listing of final data category assignments and confidentiality determinations.

Comment: One commenter stated that the EPA should reconsider the proposed determination of "not CBI" for the number of components identified as leaking in a calendar year and the average time the surveyed components are assumed to be leaking. The commenter asserted that designating this information as CBI would encourage more reporters to voluntarily conduct leak surveys. The commenter also noted that this information is publically available for some sources and suggested that the rule provide an exception from classification

as CBI for components subject to State programs or NSPS that already require public disclosure. Another commenter requested that the EPA protect the community's right to know and not allow companies to keep the public from finding out about leaks from hydrocarbon facilities.

Response: While it is possible that the requirement to report the number of leaking components and the average time those components were leaking could discourage some reporters from conducting voluntary equipment leak surveys, this is not a valid reason to allow reporters to claim these data elements as confidential. As noted in section III.C of the preamble to the proposed rule, the EPA proposed that disclosure of these data elements is unlikely to cause substantial harm to a business's competitive position, and the commenter did not indicate that the EPA's determination was incorrect. Therefore, the EPA is finalizing the confidentiality determinations for these data elements as "not CBI."

IV. Impacts of the Final Amendments to Subpart W

A. Impacts of the Final Amendments

The final amendments to subpart W revise costs associated with the use of the monitoring methods and the calculation methodology based on equipment leak surveys for reporters in the following industry segments: Onshore Petroleum and Natural Gas Production, Onshore Petroleum and Natural Gas Gathering and

Boosting, Onshore Natural Gas Transmission Compression, Underground Natural Gas Storage, LNG Storage, and LNG Import and Export Equipment. Reporters in these industry segments are required to use the results of fugitive emissions component monitoring required for well sites and compressor stations under the NSPS subpart 0000a. Reporters in these segments with components not subject to the NSPS subpart 0000a well site or compressor station fugitive emissions requirements and for which they are currently required to use the calculation methodology based on population counts under subpart W may voluntarily use the calculation methodology based on equipment leak surveys for those components if the equipment leak survey is conducted following a monitoring method listed in subpart W.

The EPA received comments from one commenter regarding the specific impacts of the proposed amendments. After evaluating these comments and reviewing other changes from proposal, the EPA revised the impacts assessment from proposal. The EPA estimates that the costs of the final amendments to subpart W are slightly more burdensome than we estimated at proposal, but they do not significantly change the overall burden to subpart W reporters. The EPA estimated that the additional costs to subpart W reporters in the Onshore Petroleum and Natural Gas Production and the Onshore Petroleum and Natural Gas Gathering and Boosting industry segments to transition their existing

equipment leak recordkeeping, calculating, and reporting systems to use the calculation methodology based on equipment leak surveys and to determine which components are subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions requirements and which are not, will be approximately \$110,000 per year, or about \$410 per reporter. The EPA estimated that the additional costs for subpart W reporters in the other industry segments (*i.e.*, Onshore Natural Gas Transmission Compression, Underground Natural Gas Storage, Liquefied Natural Gas (LNG) Storage, and LNG Import and Export Equipment) to add a few new emission factors to their existing systems (rather than transitioning their recordkeeping, calculating, and reporting systems) and to determine which components are covered by the NSPS subpart OOOOa well site or compressor station fugitive emissions requirements and which are not, will be approximately \$20,000 per year or about \$110 per reporter. The total costs are approximately \$128,400 per year for all reporters, or about \$286 per reporter. See the memorandum, "Assessment of Impacts of the Final Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems" in Docket ID No. EPA-HQ-OAR-2015-0764 for additional information.

B. Summary of Comments and Responses

This section summarizes the major comments and responses related to the impacts of the proposed amendments to subpart W

of part 98. We note that while several commenters asserted that the proposed rule would be burdensome for many operators and suggested revisions to the rule requirements that would reduce the burden, only one commenter provided comments on the EPA's impacts estimate and supporting statement, and that commenter's major comments are summarized in this section. See "Response to Public Comments on Greenhouse Gas Reporting Rule: Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems" in Docket ID No. EPA-HQ-OAR-2015-0764 for a complete listing of all comments and responses.

Comment: One commenter stated that the EPA's estimate of two hours of labor and \$198 per reporter significantly underestimates and misrepresents the amount of time and effort that goes into implementing a new rule. The commenter provided a cost estimate that assumes more labor hours than in the EPA's memorandum "Assessment of Impacts of the Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems" (Docket Item No. EPA-HQ-OAR-2015-0764-0025). The commenter noted that as more sites become subject to the NSPS subpart 0000a at a facility, the costs of managing the data and processing it into a usable format for the GHGRP will increase each year for that reporter. The commenter also noted that the EPA was incorrect in assuming that there

would be no costs for facilities in the Onshore Natural Gas Processing segment.

Response: The EPA has evaluated the comments and has made changes to the estimate of burden in the supporting statement. The following paragraphs address each of the points in the commenter's detailed cost estimate included with the comment letter and explain how the points are being addressed in the final burden and cost estimate.

The commenter suggested adding burden of two hours in the first year related to the initial monitoring plan development and burden of 0.5 hours in subsequent years related to yearly monitoring plan revisions. The EPA did not include costs at proposal related to the monitoring plan because the subpart W amendments do not require the development of a separate monitoring plan. Instead, the subpart W amendments cross reference the monitoring plan that is already being developed according to the NSPS subpart 0000a. The EPA recognizes that reporters that are not subject to the NSPS subpart 0000a would not already be required to develop a monitoring plan under the NSPS subpart 0000a; however, reporters that elect to use one of the new leak detection methods are also electing to incur the burden of developing a monitoring plan. Therefore, there is no monitoring plan burden associated with the subpart W amendments

and the final burden and cost estimate has not changed from proposal as a result of this comment.

The commenter suggested changing the number of hours to revise the reporting system to five hours and to allow one hour for maintenance in each subsequent year. At proposal, the EPA estimated that revising the reporting system to use the calculation methodology based on equipment leak surveys would require two hours. The commenter did not provide the basis for their estimate of five hours to update the data management system. The overall reporting costs for compliance already include a burden of ten hours per year and the EPA disagrees that updating the data management system would encompass half of that allotment because EPA anticipates that reporters would only need to add a few emission factors for leaking components to their existing system, rather than something more time-intensive such as creating a new data management system. We reviewed the revisions expected to be needed in the data management system. While we maintain that two hours are sufficient to implement the calculation methodology based on equipment leak surveys into a reporter's existing system, we recognize that this process will also require quality assurance reviews and testing to ensure the data are stored properly and the calculations are performed correctly. Therefore, we increased the number of hours estimated to revise the reporting system from two hours to 3.5 hours to

account for these additional quality reviews of the data management system. However, the EPA has made no changes to burden associated with maintenance of the revised reporting system because the EPA asserts that any reporting system maintenance related to subpart W is already reflected in the twenty hours per year allotted to each subpart W reporter for recordkeeping and reporting activities.

The commenter suggested that the EPA adjust the proposed burden and cost estimate by adding the following activities and burden estimates: (1) time for staff to process the survey data resulting from the calculation methodology based on equipment leak surveys and to enter it into the GHGRP system at a burden of three hours per year; (2) time for staff training at a burden of two hours for initial training and one hour per year in subsequent years; and (3) time for staff to review the data for quality assurance, follow missing data requirements, report data to the EPA, and retain all records at a burden of four total hours per year.

At proposal, the EPA did not include burden related to these activities because they are covered by the twenty hours per year already accounted for in the overall subpart W reporter burden for recordkeeping and reporting activities. Therefore, the final burden and cost estimate has not changed from proposal as a result of these comments.

However, at proposal, the EPA did not account for the time associated with determining which components in the reporting system are covered by the NSPS subpart 0000a well site or compressor station fugitive emissions requirements and which are not. As a result, the EPA has added 0.5 hours per reporter in the first year that the reporter has an affected collection of fugitive emissions components subject to the NSPS subpart 0000a well site or compressor station fugitive emissions requirements and 0.1 hours per reporter in subsequent years.

Finally, for the reasons described in section II.B.2 of this preamble, the final rule language specifies that the requirement to use the NSPS subpart 0000a results as part of the calculation methodology based on equipment leak surveys only applies to components subject to the NSPS subpart 0000a well site or compressor station fugitive emissions requirements. The subpart W equipment leak survey requirements for facilities in the Onshore Natural Gas Processing segment do not change as a result of these amendments. Therefore, the EPA is not including any burden estimate for Onshore Natural Gas Processing reporters (*i.e.*, the revisions to the burden estimate described in this response do not apply to the Onshore Natural Gas Processing segment).

Overall, the burden and cost estimate has been revised as discussed above from 502 hours and \$50,000 per year at proposal

to approximately 1,295 hours and \$128,400 per year for all reporters.

V. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be found at <http://www2.epa.gov/laws-and-executive-orders>.

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is not a significant regulatory action and was therefore not submitted to the Office of Management and Budget (OMB) for review.

B. Paperwork Reduction Act (PRA)

The information collection activities in this rule have been submitted for approval to the OMB under the PRA. The Information Collection Request (ICR) document that the EPA prepared has been assigned EPA ICR number 2300.19. You can find a copy of the ICR in the docket for this rule, and it is briefly summarized here. The information collection requirements are not enforceable until OMB approves them.

This action increases burden for industry segments that conduct equipment leak surveys. These revisions are expected to increase respondent burden for subpart W reporters that become subject to the NSPS subpart 0000a well site or compressor

station fugitive requirements. To accommodate the new methods and emission factors added by these final amendments, the EPA expects that each affected subpart W reporter will either revise their reporter-specific calculation mechanism (*i.e.*, calculation spreadsheet, recordkeeping database, etc.) or add a few new emission factors to the reporter-specific calculation mechanism, when and if the reporter becomes subject to the NSPS subpart 0000a well site or compressor station fugitive requirements. The recordkeeping and reporting requirements are being finalized as proposed. Impacts associated with the final revisions to the recordkeeping and reporting requirements are detailed in the memorandum "Assessment of Impacts of the Final Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems" (see Docket ID No. EPA-HQ-OAR-2015-0764).

Data collection provides a critical tool for communities to identify nearby sources of GHGs and provides information to state and local governments. The data can be used to complement atmospheric GHG studies and inform updates to emission inventories such as the *Inventory of U.S. Greenhouse Gas Emissions and Sinks* (Inventory). Various activity data are collected that can be used to improve understanding of the occurrence of emissions from a variety of sources.

Data collected must be made available to the public unless the data qualify for CBI treatment under the CAA and EPA regulations. All data determined by the EPA to be CBI are safeguarded in accordance with regulations in 40 CFR chapter 1, part 2, subpart B.

Respondents/affected entities: The respondents in this information collection include owners and operators of petroleum and natural gas systems facilities that report their GHG emissions from equipment leaks to the EPA to comply with subpart W.

Respondent's obligation to respond: The respondent's obligation to respond is mandatory under the authority provided in CAA section 114.

Estimated number of respondents: Approximately 899 respondents per year.

Frequency of response: Annual.

Total estimated burden: 1,295 hours (per year). Burden is defined at 5 CFR 1320.3(b).

Total estimated cost: \$128,400 (per year), includes \$0 annualized capital or operation and maintenance costs.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for the EPA's regulations in 40 CFR are listed in 40 CFR

part 9. When OMB approves this ICR, the EPA will announce that approval in the Federal Register and publish a technical amendment to 40 CFR part 9 to display the OMB control number for the approved information collection activities contained in this final rule.

C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. The small entities directly regulated by this final rule include small businesses in the petroleum and natural gas industry. The EPA has determined that some small businesses will be affected because their production processes emit GHGs exceeding the reporting threshold. This action includes amendments that may result in a small burden increase on some subpart W reporters, but the EPA has determined that the increased cost of less than \$286 per reporter is not a significant impact. Details of this analysis are presented in "Assessment of Impacts of the Final Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems" in Docket ID No. EPA-HQ-OAR-2015-0764.

D. Unfunded Mandates Reform Act (UMRA)

This action does not contain an unfunded mandate of \$100 million or more as described in UMRA, 2 U.S.C. 1531-1538, and does not significantly or uniquely affect small governments. As

shown in sections IV.A and V.B of this preamble, the annual cost of this action is \$128,400, which is well under \$100 million per year.

E. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

F. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments

This action has tribal implications. However, it will neither impose substantial direct compliance costs on federally recognized tribal governments, nor preempt tribal law. This regulation will apply directly to petroleum and natural gas facilities that emit GHGs. Although few facilities that will be subject to the rule are likely to be owned by tribal governments, the EPA sought opportunities to provide information to tribal governments and representatives during the development of the proposed and final subpart W that was promulgated on November 30, 2010 (75 FR 74458).

The EPA consulted with tribal officials under the EPA Policy on Consultation and Coordination with Indian Tribes early in the process of developing this regulation to permit them to

have meaningful and timely input into its development. A summary of that consultation is provided in section IV.F of the preamble to the re-proposal of subpart W published on April 12, 2010 (75 FR 18608), and section IV.F of the preamble to the subpart W 2010 final rule published on November 30, 2010 (75 FR 74458).

G. Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that the EPA has reason to believe may disproportionately affect children, per the definition of "covered regulatory action" in section 2-202 of the Executive Order. This action is not subject to Executive Order 13045 because it does not concern an environmental health risk or safety risk.

H. Executive Order 13211: Actions that Significantly Affect Energy Supply, Distribution, or Use

This action is not subject to Executive Order 13211, because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act (NTTAA)

This rulemaking does not involve technical standards.

*J. Executive Order 12898: Federal Actions to Address
Environmental Justice in Minority Populations and Low-Income
Populations*

The EPA believes that this action is not subject to Executive Order 12898 (59 FR 7629, February 16, 1994) because it does not establish an environmental health or safety standard. Instead, this rule addresses information collection and reporting and verification procedures.

K. Congressional Review Act (CRA)

This action is subject to the CRA, and the EPA will submit a rule report to each House of the Congress and to the Comptroller General of the United States. This action is not a "major rule" as defined by 5 U.S.C. 804(2).

List of Subjects in 40 CFR Part 98

Environmental protection, Administrative practice and procedure, Greenhouse gases, Reporting and recordkeeping requirements.

Dated: November 10, 2016.

Gina McCarthy,
Administrator.

For the reasons stated in the preamble, title 40, chapter I, of the Code of Federal Regulations is amended as follows:

PART 98—MANDATORY GREENHOUSE GAS REPORTING

1. The authority citation for part 98 continues to read as follows:

Authority: 42 U.S.C. 7401-7671q.

Subpart W—Petroleum and Natural Gas Systems

2. Section 98.232 is amended by:

- a. Revising paragraph (c) (21);
- b. Adding paragraph (e) (8);
- c. Revising paragraph (f) (5);
- d. Adding paragraphs (f) (6) through (8);
- e. Revising paragraphs (g) (3) and (4);
- f. Adding paragraphs (g) (5) through (7);
- g. Revising paragraphs (h) (4) and (5);
- h. Adding paragraphs (h) (6) through (8); and
- i. Revising paragraph (j) (10).

The revisions and additions read as follows:

§98.232 GHGs to report.

* * * * *

(c) * * *

(21) Equipment leaks from valves, connectors, open ended lines, pressure relief valves, pumps, flanges, and other components (such as instruments, loading arms, stuffing boxes,

compressor seals, dump lever arms, and breather caps, but does not include components listed in paragraph (c)(11) or (19) of this section, and it does not include thief hatches or other openings on a storage vessel).

* * * * *

(e) * * *

(8) Equipment leaks from all other components that are not listed in paragraph (e)(1), (2), or (7) of this section and are either subject to the well site or compressor station fugitive emissions standards in §60.5397a of this chapter or you elect to survey using a leak detection method described in §98.234(a)(6) or (7). The other components subject to this paragraph (e)(8) also do not include thief hatches or other openings on a storage vessel. If these other components are not subject to the well site or compressor station fugitive emissions standards in §60.5397a of this chapter, you may also elect to report emissions from these other components if you elect to survey them using a leak detection method described in §98.234(a)(1) through (5).

(f) * * *

(5) Equipment leaks from valves, connectors, open ended lines, pressure relief valves, and meters associated with storage stations.

(6) Equipment leaks from all other components that are associated with storage stations, are not listed in paragraph (f)(1), (2), or (5) of this section, and are either subject to the well site or compressor station fugitive emissions standards in §60.5397a of this chapter or you elect to survey using a leak detection method described in §98.234(a)(6) or (7). If these other components are not subject to the well site or compressor station fugitive emissions standards in §60.5397a of this chapter, you may also elect to report emissions from these other components if you elect to survey them using a leak detection method described in §98.234(a)(1) through (5).

(7) Equipment leaks from valves, connectors, open-ended lines, and pressure relief valves associated with storage wellheads.

(8) Equipment leaks from all other components that are associated with storage wellheads, are not listed in paragraph (f)(1), (2), or (7) of this section, and are either subject to the well site or compressor station fugitive emissions standards in §60.5397a, of this chapter or you elect to survey using a leak detection method described in §98.234(a)(6) or (7). If these other components are not subject to the well site or compressor station fugitive emissions standards in §60.5397a of this chapter, you may also elect to report emissions from these

other components if you elect to survey them using a leak detection method described in §98.234(a) (1) through (5).

(g) * * *

(3) Flare stack emissions.

(4) Equipment leaks from valves, pump seals, connectors, and other equipment leak sources in LNG service.

(5) Equipment leaks from vapor recovery compressors, if you do not survey components associated with vapor recovery compressors in accordance with paragraph (g) (6) of this section.

(6) Equipment leaks from all components in gas service that are associated with a vapor recovery compressor, are not listed in paragraph (g) (1) or (2) of this section, and that are either subject to the well site or compressor station fugitive emissions standards in §60.5397a of this chapter or you elect to survey using a leak detection method described in §98.234(a).

(7) Equipment leaks from all components in gas service that are not associated with a vapor recovery compressor, are not listed in paragraph (g) (1) or (2) of this section, and are either subject to the well site or compressor station fugitive emissions standards in §60.5397a of this chapter or you elect to survey using a leak detection method described in §98.234(a) (6) or (7). If these components are not subject to the well site or compressor station fugitive emissions standards in §60.5397a of this chapter, you may also elect to report emissions from these

components if you elect to survey them using a leak detection method described in §98.234(a) (1) through (5).

(h) * * *

(4) Flare stack emissions.

(5) Equipment leaks from valves, pump seals, connectors, and other equipment leak sources in LNG service.

(6) Equipment leaks from vapor recovery compressors, if you do not survey components associated with vapor recovery compressors in accordance with paragraph (h) (7) of this section.

(7) Equipment leaks from all components in gas service that are associated with a vapor recovery compressor, are not listed in paragraph (h) (1) or (2) of this section, and that are either subject to the well site or compressor station fugitive emissions standards in §60.5397a of this chapter or you elect to survey using a leak detection method described in §98.234(a).

(8) Equipment leaks from all components in gas service that are not associated with a vapor recovery compressor, are not listed in paragraph (h) (1) or (2) of this section, and that are either subject to the well site or compressor station fugitive emissions standards in §60.5397a of this chapter or you elect to survey using a leak detection method described in §98.234(a) (6) or (7). If these components are not subject to the well site or compressor station fugitive emissions standards in §60.5397a of this chapter, you may also elect to report emissions from these

components if you elect to survey them using a leak detection method described in §98.234(a) (1) through (5).

* * * * *

(j) * * *

(10) Equipment leaks from valves, connectors, open ended lines, pressure relief valves, pumps, flanges, and other components (such as instruments, loading arms, stuffing boxes, compressor seals, dump lever arms, and breather caps, but does not include components in paragraph (j) (8) or (9) of this section, and it does not include thief hatches or other openings on a storage vessel).

* * * * *

3. Section 98.233 is amended by:

a. Revising the parameter EF_t of Equation W-1 in paragraph (a) introductory text, and paragraph (q);

b. Removing the first two sentences of paragraph (r) introductory text and adding four sentences in their place; and

c. Revising the parameters $Count_e$ and $EF_{s,e}$ of Equation W-32A in paragraph (r) introductory text, and paragraphs (r) (3) through (5).

The revisions read as follows:

§98.233 Calculating GHG emissions.

* * * * *

(a) * * *

* * * *

EF_t = Population emission factors for natural gas pneumatic device vents (in standard cubic feet per hour per device) of each type "t" listed in Tables W-1A, W-3B, and W-4B to this subpart for onshore petroleum and natural gas production, onshore natural gas transmission compression, and underground natural gas storage facilities, respectively. Onshore petroleum and natural gas gathering and boosting facilities must use the population emission factors listed in Table W-1A to this subpart.

* * * *

(q) *Equipment leak surveys.* For the components identified in paragraphs (q)(1)(i) through (iii) of this section, you must conduct equipment leak surveys using the leak detection methods specified in paragraphs (q)(1)(i) through (iii) of this section. For the components identified in paragraph (q)(1)(iv) of this section, you may elect to conduct equipment leak surveys, and if you elect to conduct surveys, you must use a leak detection method specified in paragraph (q)(1)(iv) of this section. This paragraph (q) applies to components in streams with gas content greater than 10 percent CH₄ plus CO₂ by weight. Components in streams with gas content less than or equal to 10 percent CH₄ plus CO₂ by weight are exempt from the requirements of this paragraph (q) and do not need to be reported. Tubing systems equal to or less than one half inch diameter are exempt from the requirements of this paragraph (q) and do not need to be reported.

(1) *Survey requirements.* (i) For the components listed in §98.232(e)(7), (f)(5), (g)(4), and (h)(5), that are not subject to the well site or compressor station fugitive emissions standards in §60.5397a of this chapter, you must conduct surveys using any of the leak detection methods listed in §98.234(a) and calculate equipment leak emissions using the procedures specified in paragraph (q)(2) of this section.

(ii) For the components listed in §98.232(d)(7) and (i)(1), you must conduct surveys using any of the leak detection methods listed in §98.234(a)(1) through (5) and calculate equipment leak emissions using the procedures specified in paragraph (q)(2) of this section.

(iii) For the components listed in §98.232(c)(21), (e)(7), (e)(8), (f)(5), (f)(6), (f)(7), (f)(8), (g)(4), (g)(6), (g)(7), (h)(5), (h)(7), (h)(8), and (j)(10) that are subject to the well site or compressor station fugitive emissions standards in §60.5397a of this chapter, you must conduct surveys using any of the leak detection methods in §98.234(a)(6) or (7) and calculate equipment leak emissions using the procedures specified in paragraph (q)(2) of this section.

(iv) For the components listed in §98.232(c)(21), (e)(8), (f)(6), (f)(7), (f)(8), (g)(6), (g)(7), (h)(7), (h)(8), or (j)(10), that are not subject to fugitive emissions standards in §60.5397a of this chapter, you may elect to conduct surveys

according to this paragraph (q), and, if you elect to do so, then you must use one of the leak detection methods in §98.234(a).

(A) If you elect to use a leak detection method in §98.234(a) (1) through (5) for the surveyed component types in §98.232(c) (21), (f) (7), (g) (6), (h) (7), or (j) (10) in lieu of the population count methodology specified in paragraph (r) of this section, then you must calculate emissions for the surveyed component types in §98.232(c) (21), (f) (7), (g) (6), (h) (7), or (j) (10) using the procedures in paragraph (q) (2) of this section.

(B) If you elect to use a leak detection method in §98.234(a) (1) through (5) for the surveyed component types in §98.232(e) (8), (f) (6), (f) (8), (g) (7), and (h) (8), then you must use the procedures in paragraph (q) (2) of this section to calculate those emissions.

(C) If you elect to use a leak detection method in §98.234(a) (6) or (7) for any elective survey under this subparagraph (q) (1) (iv), then you must survey the component types in §98.232(c) (21), (e) (8), (f) (6), (f) (7), (f) (8), (g) (6), (g) (7), (h) (7), (h) (8), and (j) (10) that are not subject to fugitive emissions standards in §60.5397a of this chapter, and you must calculate emissions from the surveyed component types in §98.232(c) (21), (e) (8), (f) (6), (f) (7), (f) (8), (g) (6),

(g) (7), (h) (7), (h) (8), and (j) (10) using the emission calculation requirements in paragraph (q) (2) of this section.

(2) *Emission calculation methodology.* For industry segments listed in §98.230(a) (2) through (9), if equipment leaks are detected during surveys required or elected for components listed in paragraphs (q) (1) (i) through (iv) of this section, then you must calculate equipment leak emissions per component type per reporting facility using Equation W-30 of this section and the requirements specified in paragraphs (q) (2) (i) through (xi) of this section. For the industry segment listed in §98.230(a) (8), the results from Equation W-30 are used to calculate population emission factors on a meter/regulator run basis using Equation W-31 of this section. If you chose to conduct equipment leak surveys at all above grade transmission-distribution transfer stations over multiple years, "n," according to paragraph (q) (2) (x) (A) of this section, then you must calculate the emissions from all above grade transmission-distribution transfer stations as specified in paragraph (q) (2) (xi) of this section.

$$E_{s,p,i} = GHG_i * EF_{s,p} * \sum_{z=1}^{x_p} T_{p,z} \quad (\text{Eq. W-30})$$

Where:

$E_{s,p,i}$ = Annual total volumetric emissions of GHG_i from specific component type "p" (in accordance with paragraphs (q) (1) (i) through (iv) of this

section) in standard ("s") cubic feet, as specified in paragraphs (q)(2)(ii) through (x) of this section.

- x_p = Total number of specific component type "p" detected as leaking in any leak survey during the year. A component found leaking in two or more surveys during the year is counted as one leaking component.
- $EF_{s,p}$ = Leaker emission factor for specific component types listed in Tables W-1E, W-2, W-3A, W-4A, W-5A, W-6A, and W-7 to this subpart.
- GHG_i = For onshore petroleum and natural gas production facilities and onshore petroleum and natural gas gathering and boosting facilities, concentration of GHG_i , CH_4 , or CO_2 , in produced natural gas as defined in paragraph (u)(2) of this section; for onshore natural gas processing facilities, concentration of GHG_i , CH_4 or CO_2 , in the total hydrocarbon of the feed natural gas; for onshore natural gas transmission compression and underground natural gas storage, GHG_i equals 0.975 for CH_4 and 1.1×10^{-2} for CO_2 ; for LNG storage and LNG import and export equipment, GHG_i equals 1 for CH_4 and 0 for CO_2 ; and for natural gas distribution, GHG_i equals 1 for CH_4 and 1.1×10^{-2} CO_2 .
- $T_{p,z}$ = The total time the surveyed component "z," component type "p," was assumed to be leaking and operational, in hours. If one leak detection survey is conducted in the calendar year, assume the component was leaking for the entire calendar year. If multiple leak detection surveys are conducted in the calendar year, assume a component found leaking in the first survey was leaking since the beginning of the year until the date of the survey; assume a component found leaking in the last survey of the year was leaking from the preceding survey through the end of the year; assume a component found leaking in a survey between the first and last surveys of the year was leaking since the preceding survey until the date of the survey; and sum times for all leaking periods. For each leaking component, account for time the component was not

operational (*i.e.*, not operating under pressure) using an engineering estimate based on best available data.

(i) You must conduct at least one leak detection survey in a calendar year. The leak detection surveys selected must be conducted during the calendar year. If you conduct multiple complete leak detection surveys in a calendar year, you must use the results from each complete leak detection survey when calculating emissions using Equation W-30. For components subject to the well site and compressor station fugitive emissions standards in §60.5397a of this chapter, each survey conducted in accordance with §60.5397a of this chapter will be considered a complete leak detection survey for purposes of this section.

(ii) Calculate both CO₂ and CH₄ mass emissions using calculations in paragraph (v) of this section.

(iii) Onshore petroleum and natural gas production facilities must use the appropriate default whole gas leaker emission factors for components in gas service, light crude service, and heavy crude service listed in Table W-1E to this subpart.

(iv) Onshore petroleum and natural gas gathering and boosting facilities must use the appropriate default whole gas leaker factors for components in gas service listed in Table W-1E to this subpart.

(v) Onshore natural gas processing facilities must use the appropriate default total hydrocarbon leaker emission factors for compressor components in gas service and non-compressor components in gas service listed in Table W-2 to this subpart.

(vi) Onshore natural gas transmission compression facilities must use the appropriate default total hydrocarbon leaker emission factors for compressor components in gas service and non-compressor components in gas service listed in Table W-3A to this subpart.

(vii) Underground natural gas storage facilities must use the appropriate default total hydrocarbon leaker emission factors for storage stations or storage wellheads in gas service listed in Table W-4A to this subpart.

(viii) LNG storage facilities must use the appropriate default methane leaker emission factors for LNG storage components in LNG service or gas service listed in Table W-5A to this subpart.

(ix) LNG import and export facilities must use the appropriate default methane leaker emission factors for LNG terminals components in LNG service or gas service listed in Table W-6A to this subpart.

(x) Natural gas distribution facilities must use Equation W-30 of this section and the default methane leaker emission factors for transmission-distribution transfer station

components in gas service listed in Table W-7 to this subpart to calculate component emissions from annual equipment leak surveys conducted at above grade transmission-distribution transfer stations. Natural gas distribution facilities are required to perform equipment leak surveys only at above grade stations that qualify as transmission-distribution transfer stations. Below grade transmission-distribution transfer stations and all metering-regulating stations that do not meet the definition of transmission-distribution transfer stations are not required to perform equipment leak surveys under this section.

(A) Natural gas distribution facilities may choose to conduct equipment leak surveys at all above grade transmission-distribution transfer stations over multiple years "n," not exceeding a five year period to cover all above grade transmission-distribution transfer stations. If the facility chooses to use the multiple year option, then the number of transmission-distribution transfer stations that are monitored in each year should be approximately equal across all years in the cycle.

(B) Use Equation W-31 of this section to determine the meter/regulator run population emission factors for each GHG_i . As additional survey data become available, you must recalculate the meter/regulator run population emission factors for each GHG_i annually according to paragraph (q) (2) (x) (C) of this section.

$$EF_{s,MR,i} = \frac{\sum_{y=1}^n \sum_{p=1}^7 E_{s,p,i,y}}{\sum_{y=1}^n \sum_{w=1}^{Count_{MR,y}} T_{w,y}} \quad (\text{Eq. W-31})$$

Where:

- $EF_{s,MR,i}$ = Meter/regulator run population emission factor for GHG_i based on all surveyed above grade transmission-distribution transfer stations over "n" years, in standard cubic feet of GHG_i per operational hour of all meter/regulator runs.
- $E_{s,p,i,y}$ = Annual total volumetric emissions at standard conditions of GHG_i from component type "p" during year "y" in standard ("s") cubic feet, as calculated using Equation W-30 of this section.
- p = Seven component types listed in Table W-7 to this subpart for transmission-distribution transfer stations.
- $T_{w,y}$ = The total time the surveyed meter/regulator run "w" was operational, in hours during survey year "y" using an engineering estimate based on best available data.
- $Count_{MR,y}$ = Count of meter/regulator runs surveyed at above grade transmission-distribution transfer stations in year "y".
- y = Year of data included in emission factor " $EF_{s,MR,i}$ " according to paragraph (q) (2) (x) (C) of this section.
- n = Number of years of data, according to paragraph (q) (2) (x) (A) of this section, whose results are used to calculate emission factor " $EF_{s,MR,i}$ " according to paragraph (q) (2) (x) (C) of this section.

(C) The emission factor " $EF_{s,MR,i}$," based on annual equipment leak surveys at above grade transmission-distribution transfer stations, must be calculated annually. If you chose to conduct

equipment leak surveys at all above grade transmission-distribution transfer stations over multiple years, "n," according to paragraph (q) (2) (x) (A) of this section and you have submitted a smaller number of annual reports than the duration of the selected cycle period of 5 years or less, then all available data from the current year and previous years must be used in the calculation of the emission factor " $EF_{s,MR,i}$ " from Equation W-31 of this section. After the first survey cycle of "n" years is completed and beginning in calendar year (n+1), the survey will continue on a rolling basis by including the survey results from the current calendar year "y" and survey results from all previous (n-1) calendar years, such that each annual calculation of the emission factor " $EF_{s,MR,i}$ " from Equation W-31 is based on survey results from "n" years. Upon completion of a cycle, you may elect to change the number of years in the next cycle period (to be 5 years or less). If the number of years in the new cycle is greater than the number of years in the previous cycle, calculate " $EF_{s,MR,i}$ " from Equation W-31 in each year of the new cycle using the survey results from the current calendar year and the survey results from the preceding number years that is equal to the number of years in the previous cycle period. If the number of years, " n_{new} ," in the new cycle is smaller than the number of years in the previous cycle, "n," calculate " $EF_{s,MR,i}$ " from Equation W-31 in each year of the new

cycle using the survey results from the current calendar year and survey results from all previous ($n_{\text{new}}-1$) calendar years.

(xi) If you chose to conduct equipment leak surveys at all above grade transmission-distribution transfer stations over multiple years, "n," according to paragraph (q)(2)(x)(A) of this section, you must use the meter/regulator run population emission factors calculated using Equation W-31 of this section and the total count of all meter/regulator runs at above grade transmission-distribution transfer stations to calculate emissions from all above grade transmission-distribution transfer stations using Equation W-32B in paragraph (r) of this section.

(r) * * * This paragraph (r) applies to emissions sources listed in §98.232(c)(21), (f)(7), (g)(5), (h)(6), and (j)(10) if you are not required to comply with paragraph (q) of this section and if you do not elect to comply with paragraph (q) of this section for these components in lieu of this paragraph (r). This paragraph (r) also applies to emission sources listed in §98.232(i)(2), (i)(3), (i)(4), (i)(5), (i)(6), and (j)(11). To be subject to the requirements of this paragraph (r), the listed emissions sources also must contact streams with gas content greater than 10 percent CH₄ plus CO₂ by weight. Emissions sources that contact streams with gas content less than or equal to 10

percent CH₄ plus CO₂ by weight are exempt from the requirements of this paragraph (r) and do not need to be reported. * * *

* * * * *

Count_e = Total number of the emission source type at the facility. For onshore petroleum and natural gas production facilities and onshore petroleum and natural gas gathering and boosting facilities, average component counts are provided by major equipment piece in Tables W-1B and Table W-1C to this subpart. Use average component counts as appropriate for operations in Eastern and Western U.S., according to Table W-1D to this subpart. Onshore petroleum and natural gas gathering and boosting facilities must also count the miles of gathering pipelines by material type (protected steel, unprotected steel, plastic, or cast iron). Underground natural gas storage facilities must count each component listed in Table W-4B to this subpart. LNG storage facilities must count the number of vapor recovery compressors. LNG import and export facilities must count the number of vapor recovery compressors. Natural gas distribution facilities must count: (1) The number of distribution services by material type; (2) miles of distribution mains by material type; and (3) number of below grade metering-regulating stations, by pressure type; as listed in Table W-7 to this subpart.

* * * * *

EF_{s,e} = Population emission factor for the specific emission source type, as listed in Tables W-1A, W-4B, W-5B, W-6B, and W-7 to this subpart. Use appropriate population emission factor for operations in Eastern and Western U.S., according to Table W-1D to this subpart.

* * * * *

(3) Underground natural gas storage facilities must use the appropriate default total hydrocarbon population emission

factors for storage wellheads in gas service listed in Table W-4B to this subpart.

(4) LNG storage facilities must use the appropriate default methane population emission factor for LNG storage compressors in gas service listed in Table W-5B to this subpart.

(5) LNG import and export facilities must use the appropriate default methane population emission factor for LNG terminal compressors in gas service listed in Table W-6B to this subpart.

* * * * *

4. Section 98.234 is amended by:

- a. Revising paragraph (a) introductory text, the paragraph (a)(1) heading, and the fourth sentence in paragraph (a)(2); and
- b. Adding paragraphs (a)(6) and (7).

The revisions and additions read as follows:

§98.234 Monitoring and QA/QC requirements.

* * * * *

(a) You must use any of the methods described in paragraphs (a)(1) through (5) of this section to conduct leak detection(s) of through-valve leakage from all source types listed in §98.233(k), (o), and (p) that occur during a calendar year. You must use any of the methods described in paragraphs (a)(1) through (7) of this section to conduct leak detection(s) of equipment leaks from components as specified in §98.233(q)(1)(i)

that occur during a calendar year. You must use any of the methods described in paragraphs (a)(1) through (5) of this section to conduct leak detection(s) of equipment leaks from components as specified in §98.233(q)(1)(ii) that occur during a calendar year. You must use one of the methods described in paragraph (a)(6) or (7) of this section to conduct leak detection(s) of equipment leaks from components as specified in §98.233(q)(1)(iii). If electing to comply with §98.233(q) as specified in §98.233(q)(1)(iv), you must use any of the methods described in paragraphs (a)(1) through (7) of this section to conduct leak detection(s) of equipment leaks from component types as specified in §98.233(q)(1)(iv) that occur during a calendar year.

(1) *Optical gas imaging instrument as specified in §60.18 of this chapter.* * * *

* * * * *

(2) * * * If the equipment leak detection methods in this paragraph cannot be used, you must use alternative leak detection devices as described in paragraph (a)(1) of this section to monitor inaccessible equipment leaks or vented emissions.

* * * * *

(6) *Optical gas imaging instrument as specified in §60.5397a of this chapter.* Use an optical gas imaging instrument

for equipment leak detection in accordance with §60.5397a(b), (c)(3), (c)(7), and (e) of this chapter and paragraphs (a)(6)(i) through (iii) of this section. Unless using methods in paragraph (a)(7) of this section, an optical gas imaging instrument must be used for all source types that are inaccessible and cannot be monitored without elevating the monitoring personnel more than 2 meters above a support surface.

(i) For the purposes of this subpart, any visible emissions from a component listed in §98.232 observed by the optical gas imaging instrument is a leak.

(ii) For the purposes of this subpart, the term "fugitive emissions component" in §60.5397a of this chapter means "component."

(iii) For the purpose of complying with §98.233(q)(1)(iv), the phrase "the collection of fugitive emissions components at well sites and compressor stations" in §60.5397a(b) of this chapter means "the collection of components for which you elect to comply with §98.233(q)(1)(iv)."

(7) *Method 21 as specified in §60.5397a of this chapter.*
Use the equipment leak detection methods in appendix A-7 to part 60 of this chapter, Method 21, in accordance with §60.5397a(b), (c)(8), and (e) of this chapter and paragraphs (a)(7)(i) through (iii) of this section. Inaccessible emissions sources, as defined in part 60 of this chapter, are not exempt from this

subpart. If the equipment leak detection methods in this paragraph cannot be used, you must use alternative leak detection devices as described in paragraph (a)(6) of this section to monitor inaccessible equipment leaks.

(i) For the purposes of this subpart, any instrument reading from a component listed in §98.232 of this chapter of 500 ppm or greater using Method 21 is a leak.

(ii) For the purposes of this subpart, the term "fugitive emissions component" in §60.5397a of this chapter means "component."

(iii) For the purpose of complying with §98.233(q)(1)(iv), the phrase "the collection of fugitive emissions components at well sites and compressor stations" in §60.5397a(b) of this chapter means "the collection of components for which you elect to comply with §98.233(q)(1)(iv)."

* * * * *

5. Section 98.236 is amended by:

- a. Redesignating paragraphs (a)(1)(xiv) through (xvii) as paragraphs (a)(1)(xv) through (xviii), respectively;
- b. Adding new paragraph (a)(1)(xiv);
- c. Redesignating paragraphs (a)(9)(x) and (xi) as paragraphs (a)(9)(xi) and (xii), respectively;
- d. Adding new paragraph (a)(9)(x);

e. Revising paragraph (q) introductory text, paragraph (q)(1), paragraph (q)(2) introductory text, paragraph (r)(3)(ii) introductory text, and the second sentence of paragraph (z) introductory text.

The revisions and additions read as follows:

§98.236 Data reporting requirements.

* * * *

(a) * * *

(1) * * *

(xiv) *Equipment leak surveys.* Report the information specified in paragraph (q) of this section.

* * * *

(9) * * *

(x) *Equipment leak surveys.* Report the information specified in paragraph (q) of this section.

* * * *

(q) *Equipment leak surveys.* For any components subject to or complying with the requirements of §98.233(q), you must report the information specified in paragraphs (q)(1) and (2) of this section. Natural gas distribution facilities with emission sources listed in §98.232(i)(1) must also report the information specified in paragraph (q)(3) of this section.

(1) You must report the information specified in paragraphs (q)(1)(i) through (v) of this section.

(i) Except as specified in paragraph (q) (1) (ii) of this section, the number of complete equipment leak surveys performed during the calendar year.

(ii) Natural gas distribution facilities performing equipment leak surveys across a multiple year leak survey cycle must report the number of years in the leak survey cycle.

(iii) Except for onshore natural gas processing facilities and natural gas distribution facilities, indicate whether any equipment components at your facility are subject to the well site or compressor station fugitive emissions standards in § 60.5397a of this chapter. Report the indication per facility, not per component type.

(iv) For facilities in onshore petroleum and natural gas production, onshore petroleum and natural gas gathering and boosting, onshore natural gas transmission compression, underground natural gas storage, LNG storage, and LNG import and export equipment, indicate whether you elected to comply with §98.233(q) according to §98.233(q) (1) (iv) for any equipment components at your facility.

(v) Report each type of method described in §98.234(a) that was used to conduct leak surveys.

(2) You must indicate whether your facility contains any of the component types subject to or complying with §98.233(q) that are listed in §98.232(c) (21), (d) (7), (e) (7), (e) (8), (f) (5),

(f) (6), (f) (7), (f) (8), (g) (4), (g) (6), (g) (7), (h) (5), (h) (7), (h) (8), (i) (1), or (j) (10) for your facility's industry segment. For each component type that is located at your facility, you must report the information specified in paragraphs (q) (2) (i) through (v) of this section. If a component type is located at your facility and no leaks were identified from that component, then you must report the information in paragraphs (q) (2) (i) through (v) of this section but report a zero ("0") for the information required according to paragraphs (q) (2) (ii) through (v) of this section.

* * * * *

(r) * * *

(3) * * *

(ii) Onshore petroleum and natural gas production facilities and onshore petroleum and natural gas gathering and boosting facilities must report the information specified in paragraphs (r) (3) (ii) (A) and (B) of this section, for each major equipment type, production type (*i.e.*, natural gas or crude oil), and geographic location combination in Tables W-1B and W-1C to this subpart for which equipment leak emissions are calculated using the methodology in §98.233(r).

* * * * *

(z) * * * If your facility contains any combustion units subject to reporting according to paragraph (a) (1) (xviii),

(a)(8)(i), or (a)(9)(xii) of this section, then you must report the information specified in paragraphs (z)(1) and (2) of this section, as applicable.

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6. Add Table W-1E to subpart W of part 98 in numerical order to read as follows:

Table W-1E to Subpart W of Part 98—Default Whole Gas Leaker Emission Factors for Onshore Petroleum and Natural Gas Production and Onshore Petroleum and Natural Gas Gathering and Boosting

Equipment components	Emission factor (scf/hour/component)	
	If you survey using any of the methods in § 98.234(a)(1) through (6)	If you survey using Method 21 as specified in § 98.234(a)(7)
Leaker Emission Factors—All Components, Gas Service¹		
Valve	4.9	3.5
Flange	4.1	2.2
Connector (other)	1.3	0.8
Open-Ended Line ²	2.8	1.9
Pressure Relief Valve	4.5	2.8
Pump Seal	3.7	1.4
Other ³	4.5	2.8
Leaker Emission Factors—All Components, Light Crude Service⁴		
Valve	3.2	2.2
Flange	2.7	1.4
Connector (other)	1.0	0.6
Open-Ended Line	1.6	1.1
Pump	3.7	2.6
Agitator Seal	3.7	2.6
Other ³	3.1	2.0

Leaker Emission Factors—All Components, Heavy Crude Service⁵		
Valve	3.2	2.2
Flange	2.7	1.4
Connector (other)	1.0	0.6
Open-Ended Line	1.6	1.1
Pump	3.7	2.6
Agitator Seal	3.7	2.6
Other ³	3.1	2.0

¹ For multi-phase flow that includes gas, use the gas service emission factors.

² The open-ended lines component type includes blowdown valve and isolation valve leaks emitted through the blowdown vent stack for centrifugal and reciprocating compressors.

³ "Others" category includes any equipment leak emission point not specifically listed in this table, as specified in §98.232(c) (21) and (j) (10).

⁴ Hydrocarbon liquids greater than or equal to 20°API are considered "light crude."

⁵ Hydrocarbon liquids less than 20°API are considered "heavy crude."

7. Remove Table W-3 to subpart W of part 98 and add Table W-3A and Table W-3B to subpart W of part 98 in numerical order to read as follows:

Table W-3A to Subpart W of Part 98—Default Total Hydrocarbon Leaker Emission Factors for Onshore Natural Gas Transmission Compression

Onshore natural gas transmission compression	Emission factor (scf/hour/component)	
	If you survey using any of the methods in § 98.234(a) (1) through (6)	If you survey using Method 21 as specified in § 98.234(a) (7)
Leaker Emission Factors—Compressor Components, Gas Service		
Valve ¹	14.84	9.51
Connector	5.59	3.58

Open-Ended Line	17.27	11.07
Pressure Relief Valve	39.66	25.42
Meter or Instrument	19.33	12.39
Other ²	4.1	2.63
Leaker Emission Factors—Non-Compressor Components, Gas Service		
Valve ¹	6.42	4.12
Connector	5.71	3.66
Open-Ended Line	11.27	7.22
Pressure Relief Valve	2.01	1.29
Meter or Instrument	2.93	1.88
Other ²	4.1	2.63

¹ Valves include control valves, block valves and regulator valves.

² Other includes any potential equipment leak emission point in gas service that is not specifically listed in this table, as specified in §98.232(e)(8).

Table W-3B to Subpart W of Part 98—Default Total Hydrocarbon Population Emission Factors for Onshore Natural Gas Transmission Compression

Population Emission Factors—Gas Service Onshore natural gas transmission compression	Emission factor (scf/hour/component)
Low Continuous Bleed Pneumatic Device Vents ¹	1.37
High Continuous Bleed Pneumatic Device Vents ¹	18.20
Intermittent Bleed Pneumatic Device Vents ¹	2.35

¹ Emission Factor is in units of "scf/hour/device."

8. Remove Table W-4 to subpart W of part 98 and add Table W-4A and Table W-4B to subpart W of part 98 in numerical order to read as follows:

Table W-4A to Subpart W of Part 98—Default Total Hydrocarbon Leaker Emission Factors for Underground Natural Gas Storage

Underground natural gas storage	Emission factor (scf/hour/ component)	
	If you survey using any of the methods in § 98.234(a) (1) through (6)	If you survey using Method 21 as specified in § 98.234(a) (7)
Leaker Emission Factors—Storage Station, Gas Service		
Valve ¹	14.84	9.51
Connector (other)	5.59	3.58
Open-Ended Line	17.27	11.07
Pressure Relief Valve	39.66	25.42
Meter and Instrument	19.33	12.39
Other ²	4.1	2.63
Leaker Emission Factors—Storage Wellheads, Gas Service		
Valve ¹	4.5	3.2
Connector (other than flanges)	1.2	0.7
Flange	3.8	2.0
Open-Ended Line	2.5	1.7
Pressure Relief Valve	4.1	2.5
Other ²	4.1	2.5

¹ Valves include control valves, block valves and regulator valves.

² Other includes any potential equipment leak emission point in gas service that is not specifically listed in this table, as specified in §98.232(f) (6) and (8).

Table W-4B to Subpart W of Part 98—Default Total Hydrocarbon Population Emission Factors for Underground Natural Gas Storage

Underground natural gas storage	Emission factor (scf/hour/ component)
Population Emission Factors—Storage Wellheads, Gas Service	
Connector	0.01
Valve	0.1

Pressure Relief Valve	0.17
Open-Ended Line	0.03
Population Emission Factors—Other Components, Gas Service	
Low Continuous Bleed Pneumatic Device Vents ¹	1.37
High Continuous Bleed Pneumatic Device Vents ¹	18.20
Intermittent Bleed Pneumatic Device Vents ¹	2.35

¹ Emission Factor is in units of "scf/hour/device."

9. Remove Table W-5 to subpart W of part 98 and add Table W-5A and Table W-5B to subpart W of part 98 in numerical order to read as follows:

**Table W-5A to Subpart W of Part 98—Default Methane Leaker
Emission Factors for Liquefied Natural Gas (LNG) Storage**

LNG storage	Emission factor (scf/hour/ component)	
	If you survey using any of the methods in § 98.234(a) (1) through (6)	If you survey using Method 21 as specified in § 98.234 (a) (7)
Leaker Emission Factors—LNG Storage Components, LNG Service		
Valve	1.19	0.23
Pump Seal	4.00	0.73
Connector	0.34	0.11
Other ¹	1.77	0.99
Leaker Emission Factors—LNG Storage Components, Gas Service		
Valve ²	14.84	9.51
Connector	5.59	3.58
Open-Ended Line	17.27	11.07
Pressure Relief Valve	39.66	25.42
Meter and Instrument	19.33	12.39
Other ³	4.1	2.63

- ¹ "Other" equipment type for components in LNG service should be applied for any equipment type other than connectors, pumps, or valves.
- ² Valves include control valves, block valves and regulator valves.
- ³ "Other" equipment type for components in gas service should be applied for any equipment type other than valves, connectors, flanges, open-ended lines, pressure relief valves, and meters and instruments, as specified in §98.232(g)(6) and (7).

Table W-5B to Subpart W of Part 98—Default Methane Population Emission Factors for Liquefied Natural Gas (LNG) Storage

LNG storage	Emission factor (scf/hour/ component)
Population Emission Factors—LNG Storage Compressor, Gas Service	
Vapor Recovery Compressor ¹	4.17

¹ Emission Factor is in units of "scf/hour/device."

10. Remove Table W-6 to subpart W of part 98 and add Table W-6A and Table W-6B to subpart W of part 98 in numerical order to read as follows:

Table W-6A to Subpart W of Part 98—Default Methane Leaker Emission Factors for LNG Import and Export Equipment

LNG import and export equipment	Emission factor (scf/hour/ component)	
	If you survey using any of the methods in § 98.234(a) (1) through (6)	If you survey using Method 21 as specified in § 98.234(a) (7)
Leaker Emission Factors—LNG Terminals Components, LNG Service		
Valve	1.19	0.23
Pump Seal	4.00	0.73
Connector	0.34	0.11
Other ¹	1.77	0.99
Leaker Emission Factors—LNG Terminals Components, Gas Service		
Valve ²	14.84	9.51

Connector	5.59	3.58
Open-Ended Line	17.27	11.07
Pressure Relief Valve	39.66	25.42
Meter and Instrument	19.33	12.39
Other ³	4.1	2.63

¹ "Other" equipment type for components in LNG service should be applied for any equipment type other than connectors, pumps, or valves.

² Valves include control valves, block valves and regulator valves.

³ "Other" equipment type for components in gas service should be applied for any equipment type other than valves, connectors, flanges, open-ended lines, pressure relief valves, and meters and instruments, as specified in §98.232(h)(7) and (8).

Table W-6B to Subpart W of Part 98—Default Methane Population Emission Factors for LNG Import and Export Equipment

LNG import and export equipment	Emission factor (scf/hour/ component)
Population Emission Factors—LNG Terminals Compressor, Gas Service	
Vapor Recovery Compressor ¹	4.17

¹ Emission Factor is in units of "scf/hour/compressor."